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THE PHARMACEUTICAL SOCIETY.

The twentieth anniversary of the Pharmaceutical Society was held on the 15th instant, the day following the conversazione reported in our last. We are glad to notice that the Council propose taking a more enlarged view of their position and responsibilities. From the able address of the President we quote the following passages:—

"One of the great objects which Mr. Jacob Bell early and most anxiously sought to attain, was to bring together all the respectable members of our body so as to form the foundation of his edifice, but great difficulties were experienced with many who could only be induced to look at the immediate profit-and-loss view of the matter, and with this class protection from some real or apprehended evil, and not science, was the point upon which the most successful argument could be founded. Time, however, which in its progress enlightens most men, is gradually, but firmly, convincing them that connexion, however slight, with the higher objects of a great Society is likely to prove a source of profit, by giving tone and respectability to the holders. It is therefore to be desired that men of this class, whose age, respectability, and long connexion with the trade, ought to have ensured their being numbered with the founders of this Society, should be now brought into union with us. I believe that some of these gentlemen were originally deterred from joining the Society, not certainly by any want of qualification, but probably by a sort of conservative feeling which kept them aloof from the more active spirits of the day. It is satisfactory to find that now the desire to unite and co-operate is mutual. The proposal made to open again the doors of the Society to men of this class, has given alarm to some of the most zealous of the supporters of education among us, and has also been viewed as an act of injustice to our original, and also to examined Members, but I have no fear that, under the proposed arrangement, the Council would admit to membership any persons who would reflect discredit upon the body, or who could not have claimed admission equally with ourselves had we obtained a compulsory Act of Parliament." . . . .

"It cannot, however, be supposed that men of long standing in the business, however well qualified, would readily submit themselves to this test (examination), neither could we in justice call upon them to do so." . . . .

"In the distribution of the Benevolent Fund some painful cases occasionally occur, in which the Council find themselves unable to confer relief where it appears to be most urgently required, in consequence of the restrictions imposed

upon the distribution of the fund by the provisions of the Charter, which cannot be altered. One of these provisions is to the effect that the Fund shall be applied only for the relief of distressed Members, while it often happens that the very pressure of distress may have deprived a Member of the means of continuing his connexion with the Society, and at the same time of his claim for relief from the Benevolent Fund, under the restriction adverted to. It is a question whether an additional fund might not be established in connexion with the Society for the relief of such cases. I offer this as a hint for further consideration."

This is as it should be. The days of monopoly are over, and nothing is to be gained by exclusion and isolation. In the debate which followed, some of the speakers seemed to think that the admission of outsiders would benefit one side only. This is the old, exploded protectionist argument applied to pharmacy. Cannot these one-eyed philosophers see that the accession to their ranks of well-qualified associates will benefit all parties? Is the Society so rich and powerful that it can afford to turn away such from its doors? Are the present members associated to advance the interest of the profession, or for the purpose of emulating the example of the famous Tooley-street tailors? The *Chemist and Druggist* has always advocated the true interests of the Society, which consist in widening in every possible legitimate direction the basis of its operations, and we therefore trust that the suggestions quoted above will be carried out.

QUANTITATIVE ANALYSIS.

BY DR. HENRY M. NOAD, F.R.S.

ANALYSIS OF WATERS.*

Arrangement of the results of the Analysis.—On this subject Fresenius makes the following remarks:—"With respect to the principles that guide chemists in the hypothetical association of the acids and bases found in water, it is assumed that the combination of these bases and acids is governed by their respective affinities: *i.e.* the strongest acid is assumed to be combined with the strongest base, &c.; due attention being paid, however, also to the greater or less degree of solubility of the salts, since it is well known that this exercises a considerable influence upon the manifestations of the force of affinity. Thus, for instance, when lime, potash, and sulphuric acid are found in the boiled water, the sulphuric acid is assumed to exist, in the first place, in combination with the lime, &c. It cannot be denied, however, that this way of proceeding leaves much to the individual views and discretion of the analyst, and consequently that different modes of associating the several ingredients found may lead to different results for one and the same analysis. A general understanding upon this point would be very advantageous, because without it a comparison between two mineral waters can only be made as regards the direct and immediate results of the respective analyses; meanwhile, as our theoretical views on the subject may change with the progress of chemistry, it is absolutely indispensable, in reports of analysis of water, to give the direct results obtained, an analysis so recorded is of service for all times." By way of illustration, we append the results of an analysis of a saline water, which we lately had occasion to make for Dr. Kinneir, of Purton:—

ANALYSIS OF THE SALINE WATER OF PURTON, NEAR SWINDON, NORTH WALES.

The temperature of the water was nearly the same as that of the air. Specific gravity, at 60° F., = 1·0056. Free carbonic acid, 50 cubic inches per imperial gallon, the water being slowly pumped up from the well.

The analysis was performed in the usual manner, the iodine, which could be distinctly recognised in one pint of the water, being estimated as *protiodide of palladium.*

* Continued from page 136.

In the arrangement of the results of analysis, the strongest acid is assumed to be combined with the strongest base; and the lime and magnesia thrown down as carbonates by boiling, are considered as existing in the water as carbonates held in solution by carbonic acid.

Direct results of analysis calculated to one imperial pint:—

Bases.

Experiment.	Lime.	Magnesia.	Alkaline Chlorides.	Chloride of Potassium.	Chloride of Sodium.
I.	6·422	4·748	18·90	1·179	17·721
II.	6·257	4·783	19·33	1·020	18·310
Mean	6·340	4·765	19·10	1·099	18·016

Acids (or elements for replacing them).

Experiment.	Sulphuric Acid.	Chlorine.	Iodine with traces of Bromine.	Silica.	Carbonic Acid free and combined.	Carbonic Acid as Carbonate of Lime and Carbonate of Magnesia.	Carbonic Acid, free.	Phosphoric Acid.	Apocrenic Acid.
I.....	24·00	2·82	,,	0·27	,,	2·38	,,	,,	,,
II....	23·80	2·80	,,	0·29	,,	2·36	,,	,,	,,
Mean	23·90	2·81	0·0094	0·28	5·403	2·37	3·133	0·031	0·112

Verification for Lime.

Experiment.	Lime precipitated by boiling.	Lime left in solution after boiling.	Total by Calculation.	Total by Experiment.
I.	2·282	3·280	6·108	6·422
II.	2·857	3·310	6·077	6·257
Mean	2·842	3·296	6·092	6·340

Verification for Magnesia.

Experiment.	Magnesia precipitated by boiling.	Magnesia left in solution.	Total by Calculation.	Total by Experiment.
I.	0·11	4·735	4·845	4·748
II.	0·15	4·785	4·945	4·783
Mean	0·13	4·755	4 890	4·765

Residue left on Evaporation.

Experiment.	Mineral Residue.	Organic Residue.	Total Residue.
I.	51·02	0·114	51·114
II.	51·21	0·110	51·320
Mean	51·11	0·112	51·217

Solid contents of an Imperial Pint as determined by Analysis.

Carbonate of lime	5·0760
Carbonate of magnesia	0 2630
Lime (not as carbonate)	3·2200
Magnesia (not as carbonate)	4·7580
Potash	0·6930
Soda	9·5460
Chlorine	2·8100
Sulphuric acid	23·9000
Silica	0·2800
Phosphoric acid	0·0310
Bromine	traces
Iodine	0·0094
Crenic acid	traces
Apocrenic acid	0·1120
	50·6984
Residue left on evaporation	51·2170

Saline Constituents in one Imperial Gallon.

Carbonate of lime	40·608
Carbonate of magnesia	2·104
Sulphate of potash	10·264
Sulphate of soda	174·904
Sulphate of lime	62·560
Sulphate of magnesia	76·592
Chloride of magnesium	30·000
Iodide of sodium	0·088
Silica	2·080
Phosphoric acid	0·248
Crenic acid	traces
Apocrenic acid	0·896
Bromine	traces
	400·344

ACTION OF VARIOUS KINDS OF NATURAL WATERS ON LEAD: RECOGNITION AND QUANTITATIVE ESTIMATION OF THE METAL.

Gmelin, in his elaborate "Hand-book of Chemistry," sums up the state of our knowledge of the circumstances under which water becomes impregnated with lead, thus:—1. Clean lead, in contact with water and air, free from carbonic acid, yields a solution of oxide of lead, which turns reddened litmus paper blue, is turned brown by sulphuretted hydrogen, and gives a white precipitate with sulphuric acid. 2. Water, freed from air by boiling, does not dissolve lead when kept in contact with it in a close vessel. 3. Water which has been agitated with air takes up, in two hours, a quantity of oxide of lead amounting to between $\frac{1}{12000}$ and $\frac{1}{10000}$; it then reddens blue litmus paper, and gives a brownish black precipitate with sulphuretted hydrogen. 4. *Spring* water, containing $1\frac{3}{4}$ grains of saline matter in two pints, and no carbonic acid, when passed through a leaden tube 150 feet long, dissolves a quantity of lead sufficient to give a brown colour with sulphuretted hydrogen. 5. *Distilled* water, in contact with lead and air, free from carbonic acid, dissolves $\frac{1}{70000}$ of oxide, acquires an alkaline reaction, and becomes turbid on exposure to the air. Morveau was the first to notice that the presence of small quantities of carbonic acid, sulphuric acid, or of various salts, either prevents, or greatly diminishes the quantity of oxide of lead dissolved; and Yorke found that when clean lead was exposed to *spring* water, 10 pounds of which contained 1·21 gr. chloride

of sodium and chloride of calcium together, with 6·4 grs. carbonate of lime, a slight deposit of brown oxide took place on the surface of the metal, but no oxide was dissolved. In relation to the important subject of the contamination of water by lead, Christison remarks:—"Leaden pipes should not be used for conducting water unless lead remains untarnished after 24 hours immersion; they are unfit for the purpose if the water contains less than $\frac{1}{8000}$ of its weight of salts. If the quantity of salts exceeds this limit, and the salts consist mainly of sulphates and carbonates, leaden pipes may be used; but if they consist chiefly of chlorides, even 1 part in 4000 is not sufficient to prevent the solution of the lead." That it is dangerous, however, to rely on the "preservative" action of sulphates and carbonates, even when the water contains such salts in far greater quantity than indicated by Christison, will be evident from the following statement of the saline constituents of a spring water which was sent me for analysis some years ago, in consequence of its strong action on the leaden cistern in which it was stored. On examining the condition of the water in the cistern, I found the surface covered with a thick greasy scum, which proved, on examination, to consist of oxide of lead; but on testing the water beneath, taking care to avoid filtering (by which a very considerable quantity of the metal, when in solution, may be removed), no signs of lead could be detected; the water, *when filtered*, was not therefore unfitted for domestic use, but its action on lead was so remarkable, that the bottom of the cistern was, in the course of six months, eaten into holes. One gallon of this water contained nearly 78 grains of solid matter, the composition of which was,—

Silica	0·24
Carbonate of lime	15·09
Carbonate of magnesia	18·97
Sulphate of lime	15·32
Sulphate of potash	6·79
Sulphate of soda	10·77
Chloride of sodium	11·46
Organic matter	4·10
	77·74

I attribute the remarkable action of this water on lead to the decomposing organic matters which it contained. It was during the summer months, as I was informed, that the corrosion of the cistern took place so rapidly; the organic matters would then be undergoing the most active decomposition, and carbonic acid being constantly evolved against the sides and bottom of the cistern, would enter into combination with the *surface oxide*, and so form carbonate of lead.

If the organic matters dissolved in waters have an animal origin, *nitric* acid may be formed by the oxidation of the nitrogen, which will be greatly promoted if, at the same time, the water contain any alkaline carbonate. Water impregnated with nitrates acts very powerfully on lead, and if carbonates and sulphates are not also present, the water may hold in solution a very injurious quantity of lead salt. This is illustrated by the following analysis, which I made in 1848, of a well-water from Highgate, near the old churchyard on the top of the hill. It was examined on account of its powerful action on the leaden cistern in which it was stored, the constant leakage of which was a never ending source of expense.

One imperial gallon of this water contained, of—

Silica	0·896
Sulphate of potash	17·044
Sulphate of soda	9·515
Chloride of sodium	9·632
Chloride of calcium	5·920
Nitrate of lime	40·120
Nitrate of magnesia	17·064
Organic matter	*none.*
	100·191

The amount of *nitrates* in this water is something remarkable, but the contiguity of the

well to the churchyard points significantly to their source. The hardness of the water prevented its being much used for domestic purposes, which was probably a fortunate circumstance, as I found it to become sensibly impregnated after standing over lead for a few hours only.

In their chemical report on the supply of water to the metropolis, addressed to the Secretary of State, in June, 1851, Professors Graham, Miller, and Hofmann give the following as the most important practical conclusions which they arrived at, after a long inquiry undertaken to illustrate the action of water on lead,—a subject, they observe, of great difficulty, and still far from being exhausted :—

Certain salts, particularly sulphates, to which a protecting effect is usually ascribed, did not appear to exercise, uniformly, that useful property. Some salts, on the other hand, such as chlorides, and more particularly *nitrates*, increase the solvent action of water. Of all protecting actions, that of carbonate of lime, dissolved in carbonic acid, appeared to be the most considerable and surest. The soluble oxide of lead is converted into the carbonate, which, although not absolutely insoluble, appears to be the least soluble of all the salts of lead. Pure water did not dissolve a quantity of carbonate of lead greater than $\frac{1}{63}$th of a grain to the gallon, while water, on the other hand, which contained already so much as six grains of lead to the gallon, had the quantity reduced to $\frac{1}{37}$th of a grain by free exposure to the atmosphere for twenty-four hours, the lead being deposited as carbonate by the absorption of carbonic acid. Carbonic acid is usually present in well, river, and lake waters in quantity sufficient for protection; and the immunity of such waters from lead impregnation is probably to be ascribed more often to their carbonic acid than to the salts which they may also contain. *Organic* matter in *soft* water is doubly dangerous, as the rapid corrosion which it occasions may be followed by solution of the lead salt formed. As an illustration of the action of soft water, nearly free from earthy carbonates, on lead, even when no soluble organic matter is present, I may refer to a well-water from Hatton, which was analysed in this laboratory, at the request of the Lord Chief Baron, in consequence of its destructive action on the leaden cistern. This water contained 38·47 grains of saline matter per imperial gallon, consisting of—

Carbonate of lime	2·120
Carbonate of magnesia	·880
Carbonate of soda	15·196
Sulphate of potash	traces.
Sulphate of soda	10·456
Chloride of sodium	9·288
Protocarbonate of iron	·480
Silica	·050
	38·470

From a series of experiments, made by Dr. John Smith, on the water supplied to Aberdeen, by the river Dee, he arrived at the conclusion that less than $\frac{1}{20}$th of a grain of lead in the gallon of water produces no deleterious effect upon the health of those using the water for dietetical purposes, and that the lower limit of the deleterious action is between one-tenth and one-twentieth of a grain of lead to the gallon of water. Horsford, who investigated this subject at the request of the Board of Consulting Physicians of the city of Boston, sums up the result of his inquiry into the relations of lead to air and water, thus :—

1. Lead is not oxidated in dry air or in pure water deprived of air; it is oxidated in water, other things being equal in general proportion to the uncombined oxygen in solution.

2. When present in sufficient quantity, nitrates in neutral waters are to some extent reduced by lead. Both nitrates and chlorides promote the solution of some coats formed on lead.

3. Organic matter influences the action of water on lead. If *insoluble*, it impairs the action by facilitating the escape of air; if *soluble*, by consuming the oxygen in solution, and by reducing the nitrates when present. The green plants, so called, and animalculæ, which evolve oxygen, are abundant in open waters in warm weather only, and, of course, when the capacity of water to retain air in solution is lowest, so that, although oxygen is produced

in open waters by these microscopic organisms, it does not increase the vigour of their action upon lead.

This conclusion of Professor Horsford is diametrically opposed to that arrived at by Messrs. Graham, Miller, and Hofman; it is contrary, also, to my own observations, which tend to show that water containing organic matter has, generally speaking, its action on lead thereby greatly promoted.

4. Alkaline chlorides, in natural waters deprived of air, do not corrode lead. Salts generally impair the action of waters upon lead by lessening their solvent power for air, and by lessening their solvent power for other salts.

5. A coat of greater or less permeability forms in all natural waters to which lead is exposed. The first coat is a simple suboxide, absolutely insoluble in water, and solutions of salts generally. This becomes converted, in some waters, into a higher oxide, and this higher oxide, uniting with water and carbonic acid, forms a coat soluble in from 7,000 to 10,000 times its weight of pure water. The above oxide unites with sulphuric and other acids, which sometimes enter into the constitution of the coat, uniting with organic matter and iron-rust, it forms another coat, which is in the highest degree protective.

6. Hydrated peroxide of iron, in water, is not reduced by lead; hence may be inferred the freedom from corrosion of leaden pipes connected with iron mains, so far as the reduction of the pulverulent peroxide of iron may influence it.

The salt of the sea spray, which often reaches the roofs of buildings, even when they are half a mile or more from the shore, causes the rain-water to dissolve a portion of the lead, which is larger or smaller under different circumstances, and at times rises up to a quantity injurious to health, and poisonous; rain-water *alone* falling on surfaces of lead, is apt to act on them, but the water thus contaminated, by standing exposed to the air, generally clears itself from the dissolved lead, the metal separating as carbonate, and falling to the bottom; not so when sea salt is present; the metal is then in the form of chloride, which is not precipitated by the carbonic acid in the air, or at any rate very slowly and imperfectly. Water thus contaminated, may be purified very simply and effectually by treating it with carbonate of lime, as recommended by Mr. Faraday. Enough whiting or levigated chalk is to be mixed with the fluid to make it of the consistency of good milk, and the whole is either to be filtered or to stand until clear. "I have never," says Faraday, "found any sample of water, poisoned as above, that was not freed from the lead by this process; and from the actions that occur in the laboratory, I have no doubt, that if two or three pounds of such powdered chalk were put into a cistern, and stirred up occasionally after rain, it would keep the water free from lead."

Recognition and quantitative estimation of Lead in Water.—This, fortunately, is attended with no difficulties, though certain precautions are necessary when the water contains (as almost all natural waters do, more or less) soluble organic matter. We possess, in *sulphuretted hydrogen*, a test, by which the presence of a $\frac{1}{4}$ of a grain of lead is indicated in one gallon of distilled water by the production of a brown tinge. In making the experiment, the beaker should be placed on a sheet of white paper, and a second beaker, to which no sulphuretted hydrogen has been added, should be placed by its side, also on white paper, so that the faintest brown tinge may be rendered evident by comparison; a few drops of pure hydrochloric acid should be added previous to the application of the test. Dr. Smith, in his investigation of the action of the waters of the Dee and the Don on lead pipes and cisterns, employed the produced tint by sulphuretted hydrogen as a means of estimating, quantitatively, the amount of lead deposited in water. 1·6 grains of nitrate of lead were dissolved in 1000 grains of distilled water; a solution was thus prepared, 1000 grains of which contained 1 grain of metallic lead. From an accurately graduated measure, this solution was dropped into a gallon of water containing no lead, until a transmission of sulphuretted hydrogen, the same depth of tint, was developed as in the particular case on trial. Very accurate results are said to have been obtained, until the quantity of lead exceeds $\frac{1}{4}$ grain per gallon, when the colour gets so dark, that slight differences cannot be discriminated: $\frac{1}{100}$th of a grain of lead to a gallon of pure water, gave a tint quite perceptible, that is, 1 of metallic lead in 7 *millions*; and a less quantity could readily be distinguished by careful comparison, even in specimens previously containing a considerable proportion of lead, the difference of $\frac{1}{100}$th of a grain was plainly visible. The presence of organic matter in solution in water interferes materially with

the action of sulphuretted hydrogen on the lead which it may contain; and, as Dr. Smith informs us that nearly one-half of the solid matter in the water of the river Dee consisted of organic matter, it would appear that the method he describes could not give very reliable quantitative results. Previous to applying the sulphuretted hydrogen test, the water should be carefully evaporated to dryness, and the residue ignited in a small porcelain capsule, whereby the organic matter is destroyed. The saline matter should be moistened with nitric acid, and then warmed with the addition of acetic acid and water, and, if necessary, filtered. To estimate the amount of lead *quantitatively*, a gallon of the water should be employed; it should be gently evaporated to dryness, and the residue having been moistened with a few drops of nitric acid, and ignited, is digested with dilute hydrochloric acid, and filtered. The solution is neutralized with carbonate of soda, and acidified with acetic acid; a small quantity of bichromate of potash is then added, and the liquid set aside for some hours. If a yellow precipitate forms, it is *chromate of lead*, which is re-dissolved in hydrochoric acid, and tartaric acid and excess of ammonia having been added, sulphuretted hydrogen is passed through the solution. The precipitated sulphide of lead is washed by decantation, and converted into sulphate by evaporating it to dryness with a little fuming nitric acid and a drop or two of sulphuric acid. The ignited residue contains 73·6 per cent. of oxide of lead.

According to Taylor, *sulphuric acid* fails to detect $\frac{1}{15}$th of a grain of acetate of lead in one ounce of water, and begins to form a decided precipitate only when the quantity amounts to $\frac{1}{5}$th of a grain. *Iodide of potassium* forms a rich yellow precipitate with soluble salts of lead, which is soluble to some extent in boiling water, separating again, as the solution cools, in the form of magnificent golden coloured shining plates; it fails, however, according to Taylor, to indicate the presence of $\frac{1}{2}$ a grain of lead in 12 ounces of water.

With regard to the possible contamination of the water, supplied to the metropolis, with lead, Messrs. Graham, Miller, and Hofmann state, in their report, that after much consideration, and many experiments, they are disposed to conclude that the danger from lead, in town supplies of water, has been overrated; and that, with a supply from the water companies, *not less frequent than daily*, no danger is to be apprehended from the use of the present distributary apparatus, with any supply of moderately soft water which the metropolis is likely to obtain.

THE NATURAL ORDERS OF PLANTS.

LEGUMINOSÆ, OR FABACEÆ.—THE LEGUMINOUS, OR BEAN ORDER.

"THE Leguminous Order," remarks Lindley, "is not only among the most extensive that are known, but also one of the most important to man, whether we consider the beauty of the numerous species, which are among the gayest coloured, and most graceful plants of every region; or their applicability to a thousand useful purposes. The Cercis, which renders the gardens of Turkey resplendent with its myriads of purple flowers; the Acacia, not less valued for its airy foliage and elegant blossoms, than for its hard and durable wood; the Braziletto, Logwood, and Rosewoods of commerce; the Laburnum; the classical Cytisus; the Furze and the Broom, both the pride of the otherwise dreary heaths of Europe. The Bean, the Pea, the Vetch, the Clover, the Trefoil, the Lucerne, all staple articles of culture by the farmer, are so many Leguminous species. The gums Arabic and Senegal, Kino, Senna, Tragacanth, and various other drugs, not to mention Indigo, the most useful of all dyes, are products of other species; and these may be taken as a general indication of the purposes to which Leguminous plants may be applied. There is this, however, to be borne in mind, in regarding the qualities of the order in a general point of view; viz., that upon the whole it must be considered poisonous, and that those species which are used for food by man or animals are exceptions to the general rule; the deleterious juices of the order not being in such instances sufficiently concentrated to prove injurious, and being, in fact, replaced to a considerable extent by either sugar or starch." The order consists of herbaceous plants, shrubs, and large trees, which are extremely variable in appearance, and have some representatives in almost every quarter of the globe. A considerable number occur only within certain geographical limits, but others have a very wide range. There are about five hundred and twenty genera, and six thousand six hundred and fifty species. The name of the order is obviously derived from the form of

its fruit, which, in botanical language, is termed "a legume." It belongs to the class Exogens; sub-class Calycifloræ.

Botanical Characters.—The leaves are alternate, most commonly compound and stipulate (having leafy appendages at the base). The calyx (outer floral covering) is inferior, monosepalous (the sepals or divisions more or less united), and divided more or less deeply into five parts, the odd divisions being anterior. The corolla (inner floral covering) usually consists of five petals, or sometimes by abortion of four, three, two, one, or none, inserted into the base of the calyx, either papilionaceous (having a fancied resemblance to a butterfly) or regularly spreading; the odd petal, if any, posterior. The stamens (male organs) are definite (not exceeding twenty), or indefinite (above twenty), perigynous (attached to the calyx more or less, so that their position is somewhat lateral to the pistil, or female organ), rarely hypogynous, (seated below the female organ) either distinct, or united into one, two, or very rarely three bundles. The anthers (the cellular cases at the top of the filaments containing the pollen), versatile (attached to the filament in such a manner as to be moveable). The pistil (female organ) is simple, superior, one-celled, one or many seeded, commonly consisting of a single carpel, but occasionally of two, or even five. Style and stigma simple. The fruit is usually a legume, sometimes a lomentum, and rarely a drupe. Seeds, one or more, attached to the upper suture, occasionally with an aril. Albumen present or absent.

Diagnosis.—Professor Bentley thus describes them:—"Herbs, shrubs, or trees. Leaves nearly always alternate and stipulate, and usually compound. Flowers regular or irregular, often papilionaceous. Calyx inferior, five parted, odd division anterior. Petals five, or fewer by abortion, or none, perigynous, odd one, when present, posterior. Stamens distinct, or coherent in one or more bundles. Ovary superior, simple, one-celled. Style simple, proceeding from the ventral suture. Fruit usually a legume, or sometimes lomentum, and rarely a drupe. Seeds one or more, with or without albumen."

Distinction from other Orders.—It may generally be distinguished by having papilionaceous flowers, or leguminous fruit.

The order is divided into three sub-orders—

1. Papilionaceæ.—Petals papilionaceous, imbricated in æstivation, the upper or odd petal exterior, as in the Pea, Bean, Furze, Broom, &c.

2. Cæsalpinieæ.—Petals not papilionaceous, imbricated in æstivation, the upper or odd petal interior. Ex. Tamarind, Cassia, &c.

3. Mimoseæ.—Petals equal and valvate in æstivation. Ex. Acacia, &c.

Sub-Order, Papilionaceæ.

General Properties.—This sub-order comprises many species possessing nutritious and wholesome properties, as Clover (Trifolium), Lucerne and Medick (Medicago), Tares and Vetches (Ervum, vicia), &c., well-known as fodder plants. The seeds of many are employed as common articles of food for man or animals, under the name of Pulse, as Peas (Pisum), Broad Beans (Faba), Lentils (Ervum), Pigeon Peas (Cajanus), &c. Poisonous properties are, however, sometimes met with in plants or parts of plants belonging to this sub-order, as in the roots of the Scarlet-runner (Phaseolus), the seeds of Lathyrus Aphaca, &c., the seeds and bark of Laburnums, and others. The seeds known under the name of Ordeal Beans of Old Calabar, from their being used in that district for trials by ordeal, are the produce of an unknown species, supposed to be allied to the genus Dolichos, and are virulently poisonous. Some possess nutritive and saccharine properties, whilst others are diuretic, cathartic, emetic, tonic, astringent, narcotic, or emollient. Several produce excellent timber, and many contribute largely to the adornment of our gardens.

Principal Plants and Uses.

Abrus.—The roots of the species *Precatorius* are said to possess precisely the same qualities as those of the common Liquorice. In Java they are found to be demulcent. Its seeds, which are of a scarlet colour, with a black scar, and commonly used as beads for rosaries, necklaces, &c., and termed prayer beads, are stated to possess narcotic properties; this is denied by Macfadgen, who asserts them to be harmless, and merely indigestible.

Æschynomene.—The stems of the species *Paludosa* are remarkably light and spongy, and

furnish the rice-paper or Sholah of India; they are also employed for making floats and buoys for fishermen, and for the manufacture of hats at Singapore. The species *Cannabina* yields a fibre termed Duchai Hemp.

AGATI.—The bark of the species *Grandiflora* is a powerful bitter and tonic.

ALHAGI.—The species *Maurorum*, Camel's Thorn, and other species related to it, yield a kind of manna. It is the Tereng-jabim of the Arabs, and is gathered by merely shaking the branches. Some writers have supposed this to have been the manna on which the children of Israel were fed in the wilderness; which is highly improbable, and not in accordance with the account given of this substance in Holy Writ. As a food for cattle, it is highly esteemed by the Affghans.

ANAGYRIS.—The species *Fœtida* is said to be purgative, and narcotic properties are attributed to it by some.

ANDIRA.—The species *Inermis* is the Cabbage-bark Tree, the bark of which was formerly much employed as an anthelmintic, under the title of Cabbage or Worm-bark; it possesses cathartic, emetic, and narcotic properties, and is poisonous in large doses. The Partridge-wood of the cabinet-makers is thought by some to be furnished by this, whilst others attribute it to Heisteria coccinea. Natural order Olacaceæ—The Olax order. The bark of the species *Retusa* possesses similar properties, and is known under the name of Surinam Bark.

ARACHIS.—The species *Hypogæa* is the underground Kidney-bean, or Ground-nut, so named from the remarkable fact of its ripening its pods under the surface of the ground. The seeds are used as food in various parts of the world, and are occasionally roasted as chestnuts in this country, as an article of dessert. A fixed oil is extracted from them by expression, which is said to be very extensively used in India for cooking, &c., where it is termed Katchung oil. Being a very liquid oil, it is employed in this country for watches and other delicate machinery, and for burning, and other purposes.

ARTHROLOBIUM.—The leaves of the species *Scorpioides* are capable of being employed as vesicatories.

ASTRAGALUS.—Tragacanth, or Gum Dragon of the shops, is the produce of the species *Verus*, *Gummifer*, *Creticus*, and others, and exudes naturally from wounds made in the stems of these plants. It is employed in medicine for it demulcent and emollient properties, and as a stiffening agent, for crape, &c., by our manufacturers. A sweet quality is said to be found in the species *Glycyphyllus*, and others, and the seeds of the species *Bæticus*, are employed in Germany as a substitute for coffee.

BAPTISIA.—The root and herbage of the species *Tinctoria* are stated to possess antiseptic, sub-astringent, cathartic, and emetic properties. It yields a blue dye, resembling indigo, but much inferior to it, and is the Wild Indigo of the United States.

BOWDICHIA.—The bark of the species *Virgilioides* with that of one or more species of Byrsonima. Natural order—Malpighiaceæ. The Malpighia order, is said to constitute the American Alcornoco, or Alcornoque Bark of commerce. It is used by tanners.

BUTEA.—A beautiful ruby-coloured astringent gum is yielded by the species *Superba* and *Frondosa*, and termed Butea gum. In its properties it resembles Kino, and is sometimes forwarded to this country under that name. It is used in India in diarrhœas and similar diseases, for precipitating indigo, and for tanning. English tanners object to its use, on account of the colour it communicates to leather. The flowers are said to yield beautiful yellow and orange dyes.

CASTANOSPERMUM.—The seeds of the species *Australe*, when roasted, are said to resemble the chesnut in flavour. It is a native of New South Wales.

COLUTEA.—The species *Arborescens*, Bladder Senna, possesses well-marked purgative properties. Its leaves are used for the purpose of adulterating Alexandrian Senna, but may at once be detected, by both sides of the blade of the leaf being equal at the base.

CORONILLA.—The species *Emerus*, Scorpion Senna, has cathartic leaves, which have been used to adulterate Senna on the continent. It is the Sené Sauvage, or Wild Senna of France. The juice of the species *Varia* is poisonous.

CROTALARIA.—The species Juncea, a native of India, furnishes a coarse fibre, termed Sunn, Sun, Shunum, Taag, or Bengal Hemp, from which bags and low priced canvas are largely prepared in India. (This is sometimes confounded with the fibre of a Malvaceous plant Hibiscus cannabinus.) The species *Tenuifolia*, another Indian plant, yields Jubhulpore Hemp.

DALBERGIA.—Good timber trees are furnished by several species, the most valuable of which is that of the species Sissoo, the wood of which is termed Sissoo and Sheshum in India. The species *Latifolia*, yields East Indian Ebony, or Black wood. The species *Monetaria*, of Linnæus, yields a resin very similar to Dragon's Blood.

DIPTERYX.—The seeds of the species *Odorata*, known as Tonquin or Tonka beans, possess a very powerful and agreeable odour, which is due to the presence of a principle termed Courmarine, contained in the volatile oil. They are employed in perfumery, and for the purpose of scenting snuff. The species *Oleifera* also yield fragrant seeds. They constitute the Eboe Nuts of the Mosquito shore.

ERVUM.—The seeds of the species *Ervilia*, the Bitter Vetch, when mixed with flour and made into bread, is stated to produce weakness of the extremities, particularly of the limbs, and to render horses almost paralytic.

ERYTHRINA.—The species *Monosperma* is stated to yield Gum Lac.

EUCHRESTA.—The Javanese regard the species *Horsfieldia* to be a specific against the poison of venomous animals, or even such as is taken into the stomach; its action is said to be emetic when taken in large doses.

GENISTA.—Some of the species possess purgative properties. The species *Tinctoria*, Dyers' Broom, affords a good yellow dye, and, when mixed with Woad, a good green. According to Ray, the milk of cows which have fed upon it is rendered bitter, and this flavour is communicated to the butter and cheese made from it.

GEOFFRIA.—The species *Vermifuga* and *Spinulosa* possess a bark having anthelmintic properties; its effects are drastic, emetic, purgative, and narcotic, and, in large doses, poisonous.

GLYCYRRHIZA.—An article on the species *Glabra* will be found in our Botanical Calendar for September.*

INDIGOFERA.—The valuable dyeing material, Indigo, is the produce of the species *Tinctoria*, *Cærulea*, and others. It is a formidable vegetable poison. It is stated to have been employed in epilepsy and erysipelas, but its value as a remedy for these diseases is not well established. A decoction of the root of the species *tinctoria* is said to effectually destroy vermin, and the juice of the young branches, when mixed with honey, has been recommended for apthæ of the mouth in children. Indigo itself, when sprinkled on foul ulcers, is stated to have a beneficial effect in cleansing them, and in the form of solution it is applied as a cure for the disease of poultry, known in the West Indies under the name of yaws.

LATHYRUS.—The ripe seeds of the species *Aphaca* have a narcotic property, and cause excessive headache, but when green, may be eaten without inconvenience. According to Christison, flour, in which the seeds of the species *Cicera* have been ground up, is poisonous. The roots of the species *Tuberosus* yield a wholesome food.

MACHÆRIUM.—The species *Schomburgkii* yields the Itaka wood of Guiana, which is remarkable for its black and brown streaks, and is employed in cabinet work.

MELILOTUS.—The flowers of the species *Officinalis* and *Cærulea* abound in the principle termed Courmarine, which imparts to them their peculiar fragrance. An article on them will be found in our Botanical Calendar for July.† The species *Cærulea* is said to impart its peculiar odour to the Chapziger cheese of Switzerland.

MUCUNA.—The hairs covering the pods of the species *Pruriens* and *Prurita* constitute the substance known as Cowhage or Cowitch; it is sometimes employed as a mechanical anthelmintic. A strong infusion of the root of the species *Pruriens*, sweetened with honey, is stated to be used by the native practitioners of India in cholera.

MYROSPERMUM.—The species *Toluiferum* yields Balsam of Tolu, which is obtained by making incisions into the bark of the plant. The article known as Balsam of Peru is obtained from one of the species. Pereira termed it Myrospermum of Sousonante, in consequence of its growing on the Sousonante coast of San Salvador, whence we derive our supply. Dr. Royle, however, has, since Dr. Pereira's decease, termed it M. Pereira. White Balsam is obtained from the species *Pereira*, by pressing the interior of the fruit and seed, without heat, and Balsamito, or Essence, or Tincture of Virgin Balsam, made by digesting the fruit, deprived of its winged appendages, in rum.

PHASEOLUS.—The roots of the species *Radiatus*, and those of the species *Multiflorus*, the

* Vol. I. p. 305. † Vol. I. p. 214.

Scarlet Runner, are both poisonous. Some children are reported to have been poisoned at Chelsea, from the effects of those of the latter. The leaves of the species *Trilobus* are considered by Indian practitioners to be cooling, sedative, antibilious, tonic, and useful as an application to weak eyes.

PISCIDIA.—The bark of the root of the species *Erythrina*, a common Jamaica tree, is commonly employed in that country as a fish poison.

PSORALEA.—The seed of the species *Coryliflorœ* is considered by the Indian practitioners to be stomachic and deobstruent. The leaves of the species *Glandulosa* are said to be used in Chili as a substitute for Paraguay tea.

PTEROCARPUS.—The species *Draco* is one of the plants that yield Dragon's Blood. The species *Dalbergioides* is said to be the source of the Andaman Red Wood; it is a valuable timber tree, and useful for dyeing purposes. The species *Erinaceus* yields African Kino. The species *Flavus* is employed in China as a yellow dye. The species *Marsupium* yields the East Indian Amboyna, or Malabar Kino, the officinal kino of our pharmacopœias. The species *Santalinus* yields the Red Sandal, or Red Sanders Wood, which contains a peculiar colouring principle termed Santaline, and is used in medicine as a colouring agent, and by the dyer for red and scarlet dyes.

ROBINIA.—The leaves, root, and inner bark of the species *Pseudacacia*, or Locust Tree, are said to be purgative. It is frequently cultivated in Britain on account of its flowers and wood, the latter of which is hard and durable.

SAROTHAMNUS.—An article on the species *Scoparius* (formerly Cytisus Scoparius) will be found in our Botanical Calendar for June.* The species *Spartium*, Spanish Broom, possesses similar properties.

SESBANIA.—The leaves of the species *Picta* are held in high repute by the Hindoos, on account of the virtues they are thought to possess in hastening suppuration when applied in the form of a poultice.

SOJA.—The sauce called Soy is prepared in India, &c., from the legumes of the species *Hispida*.

SOPHORA.—The root and seeds of the species *Tomentosa* have been considered by some to be a specific in bilious sickness. The dried flower buds of the species *Japonica* are used in China for dyeing yellow, and are known under the name of Wai-fa.

TEPHROSIA.—A blue dye, resembling indigo, is obtained from the species *Apollinea* and *Toxicaria*, in Africa. The species *Toxicaria*, and others, are employed as fish poisons, they stupify the fish, which rise to the surface, and are then easily taken with the hand. It has been thought by some that its action upon the human system would much resemble that of Digitalis, and might prove a desirable substitute for the latter in countries of which it is not a native. The leaflets of the species *Apollinea* are sometimes used in Egypt for the purpose of adulterating Alexandrian Senna. They may be detected by their silky or silvery appearance, and by their being equal sided at the base.

TRIGONELLA.—The seeds of the species *Fœnum Grœcum*—Fenugreek, are employed in veterinary medicine.

TRIPTOLOMÆA.—Several South American species of this genus are said to furnish the Rosewood of the cabinet-makers.

VOANDZEA.—The seeds are edible, and are boiled and eaten as peas. Their native name in Surinam is Gobbe. They are stated to be largely cultivated by the African negroes.

(*To be continued*).

AN IMPROVEMENT OF LIEBIG'S CONDENSER is proposed by Feldhaus, who suggests to bend a glass tube eight feet in length, commencing about thirteen inches from its upper end, in zig-zag form nearly at right angles, the whole being in the same plane, the length of each bend about five inches, and the first and last of half this length, so as to bring both ends in a straight line. The outer tube is made of tinned sheet iron, oval instead of round; the lower part receives the glass tube with its bends horizontal, and the ends fixed by means of corks; afterwards the upper portion is soldered on. The condensing surface is thus doubled.—*American Jour. Pharm.*

SEDATIVE PILLS.—Assafœtida, 4 grammes; sulphate of morphia, 20 centigrammes. Make thirty pills. Take one or two before going to bed. These pills are excellent for quieting a dry cough.—*Bulletin Gén. de Thérapéutique.*

* Vol. I. p. 214.

PHOTOGRAPHIC CHEMICALS.—V.

ALCOHOL.—Symbol, $C_4 H_6 O_2$; Atomic weight, 46. Alcohol is a colourless volatile inflammable liquid, of an agreeable odour and an acrid burning taste. It is obtained by the distillation at a low heat of any spirituous or fermented liquor. In the form of absolute alcohol, its specific gravity at 60° is ·7938, and its boiling point 173°. It has never been frozen; but Faraday, by exposing it to a temperature of 166°, succeeded in rendering it viscous. When exposed to the air it rapidly absorbs water and becomes weaker. Absolute alcohol is made by distilling ordinary spirits of wine from carbonate of potash, and then from quick lime, by which means the whole of the water is removed. Alcohol distilled from carbonate of potash alone has a specific gravity of ·815 to ·820, and contains from 90 to 93 per cent. of real spirit. This is frequently sold for absolute alcohol. Real anhydrous alcohol is never used in photography, as the expense of making it is very great, and it could not be prepared in large quantities at a profit. Its purification and rectification will be fully described under the head of collodion. The purity of alcohol is measured by its specific gravity, the range running from proof spirit having a specific gravity of ·927—the weakest form containing nearly equal quantities of water and alcohol—to ·7938, which is anhydrous. The chief uses of alcohol in photography are in the manufacture of collodion, and in making the various developing solutions for the glass processes. By the continual immersion of the collodion plate in the nitrate of silver bath, the latter becomes saturated with ether and alcohol to such a degree, that when the acid developing solution is poured upon the plate it fails to flow in an even wave. The addition of alcohol renders the combination more easy, and the result is a quicker and more even development of the image. For this purpose ordinary rectified spirit may be used. Alcohol is also used in making varnish and for cleaning glass plates.

ALCOHOL (METHYLATED).—Spirits of wine, with 10 per cent. of wood spirit added to it, is allowed to be sold, free of excise duty, in quantities of not less than ten gallons at a time, under the name of methylated spirit. This compound must not be confounded with *methylic alcohol*, which is a definite chemical product. Being very impure, it is worthless for photographic purposes; it may, however, be used for the spirit lamp, for which purpose it affords a very cheap and efficient fuel.

ALCOHOL (METHYLIC), $C_2 H_4 O_2$; spec. grav. ·813. Synonyms.—Wood spirit, wood naphtha, pyroligneous spirit, pyroxylic spirit. This liquid is one of the products of the dry distillation of wood, and is similar in properties to ordinary alcohol. Not being subject to duty, it is used by many manufacturers in making collodion, but from its variable strength, and above all, from the difficulty with which it is purified, its use is not recommended. It is, no doubt, from using methylic alcohol that so much bad collodion finds its way into the market. Methylic alcohol in collodion may be easily detected by rubbing a few drops between the hands, when the very characteristic smell of this substance will soon give evidence of its presence. The ordinary impure quality, at about 1*s.* per pint, may be used for the spirit lamp by those who are debarred from using methylated spirit.

AMMONIA.—$NH_4 O$; atomic weight, 26. Liquor ammoniæ is made by passing the volatile gas ammonia through distilled water contained in an iced vessel until saturation takes place, which happens when about 780 volumes of the gas are absorbed. Its specific gravity varies from 1·000 to ·850, according to its strength. It rapidly absorbs carbonic acid from the air, and parts with its gas if left in an open vessel. The solution should be kept well stoppered, for the double purpose of keeping it strong and preventing the fumes from contaminating any baths kept near it; for the latter reason, it should be absolutely excluded from any room containing nitrate of silver baths, as the mere opening of a bottle of it is enough to render a neutral bath alkaline and unfit for use.

The liquor ammoniæ of the *Pharm. Lond.* contains about 10 per cent. of real ammonia, its specific gravity being ·960. Liquor ammoniæ Fortior contains 30 per cent. of real ammonia, and has a specific gravity of ·882. The latter liquid should always be used in photographic operations. Its principal use in photography is in making the so-called ammonio-nitrate of silver in the sel d'or printing process. It is used by many, with tripoli or whiting, as a detergent for cleaning glass plates, but common washing soda is quite as efficacious, more economical, and less dangerous. It is recommended by some as a fixing agent, in place of

hyposulphite of soda, in the printing process, but its pungent odour precludes its use. Some operators use it to rectify a bath which has become too acid, but this is not advisable, as nitrate of ammonia is formed, which has the property of dissolving oxide of silver, and rendering the bath alkaline.

Ammonium (Bromide of).—$NH_4 Br$; atomic weight, 96. This salt is formed by mixing equivalent solutions of bromide of calcium and carbonate of ammonia, carbonate of lime being precipitated, and bromide of ammonium remaining in the supernatant liquid. It is recommended as being a better form of bromide for adding to collodion than the corresponding salts of potassium and cadmium, being purer, more stable, and more soluble.

Ammonium (Chloride of).—$NH_4 Cl$; atomic weight, 54. This is known in commerce as hydrochlorate, or muriate of ammonia; or when in an impure state, as sal ammoniac. Being cheap, and easily obtained pure, it is nearly always used as the chlorising agent in the preparation of paper, in preference to the chlorides of sodium and barium; it is also more economical, as it contains more chlorine for a given weight than either of the other salts, the atomic weights of the three being 54, 60, and 123, respectively.

Ammonium (Iodide of).—$NH_4 I$; atomic weight, 144. When pure, iodide of ammonium crystallises in small colourless cubes. It is made from iodide of calcium, by the addition of carbonate of ammonia. Its great solubility led to its employment as a collodion iodiser, but being unstable, and liable to liberate iodine, its use has been discontinued by many operators. It is, however, used for positive collodion, as in this case its instability is not of such consequence.

Barium (Chloride of).—$Ba Cl + 2 HO$; atomic weight, 123. Chloride of barium is used by many in the preparation of plain salted paper, the tone that it gives with the chloride of gold toning bath being of a more agreeable purple than when the other chlorides are used. It is not recommended for albumenised paper. When substituted for chloride of ammonium, the quantity named must be doubled, for the reason already mentioned.

Baryta (Nitrate of).—$Ba O, NO_5$; atomic weight, 131. Nitrate of baryta crystallises in anhydrous octahedral crystals. It is used in making protonitrate of iron for the positive collodion developer.

Cadmium (Iodide of).—$Cd I$; atomic weight, 182. Iodide of cadmium is very soluble in water and alcohol, and yields, on evaporation, hexagonal tabular crystals. Being very stable, collodion, iodised with this salt, keeps sensitive and colourless for a very long time—from six or seven weeks in summer, to as many months in the colder portion of the year. It is, however, apt to render collodion somewhat ropy and glutinous in hot weather. Another objection to its use is, that nitrate of cadmium, an acid salt, is formed in the bath. These drawbacks are slight in comparison to the advantages gained in having a collodion which will remain sensitive for a long period.

Calcium (Chloride of).—$Ca Cl$; atomic weight, 56. This salt (which must not be confounded with chloride of lime) has, when dry, the property of absorbing large quantities of water from the atmosphere. It is used in making absolute alcohol, and preservative boxes for sensitised paper. If sensitive papers be placed in a dark air-tight box, with a false bottom containing a quantity of dry chloride of calcium, they will retain their sensitiveness for several weeks. When the paper is taken out it is generally so hard and horny, from the excessive desiccation, as to be very difficult to use; the sheets should therefore be removed from the box a day before they are wanted. Such boxes may be easily made, and sold at a profit. The salt gradually deliquesces by use, but may be easily redried any number of times in a hot oven. The common impure salt answers the purpose very well, the pure chloride being very expensive.

Charcoal (Animal).—This substance is preferred by many to Kaolin (q. v.) for the purification of the nitrate of silver paper bath from organic matter. It should be well washed with distilled water, to take away the excess of acid used to dissolve out the carbonate of lime contained in it.

Chloroform.—Chloroform is much used for dissolving amber in making amber varnish. A few drops of chloroform are of great service in correcting glutinosity and ropiness in collodion; from five to twenty drops per fluid ounce may be added. The purest quality should be used.

TOUCHING THE MICROSCOPE.

Dr. Carpenter, in the Introduction to the *Microscope and its Revelations*, remarks with great truth, that "no one who attentively examines the progress of any department of science save such as are of a purely abstract character, can fail to perceive how much is dependent upon the perfection of its instruments." He might have added with equal truth, that the general diffusion of a science amongst the masses depends upon the cheapness with which good and efficient apparatus appertaining to it can be made and sold. There is no branch of knowledge which exemplifies this better than that which depends on the microscope. But a few years ago this instrument was only used by scientific men with good balances at their bankers, there being no such thing existing as a good and at the same time cheap microscope. Thanks to Mr. Slugg, of Manchester, it is now possible for the pharmacist to procure at a very small outlay an instrument with which he may prosecute certain important researches connected with his business, and also render his leisure hours profitable and pleasant by examining the innumerable microscopic wonders that surround him. Mr. Slugg's instrument is truly a marvel in its way; and although not equal to one of the costly microscopes of any of our best London makers, I unhesitating affirm, after a lengthened examination of its capabilities, that it cannot be surpassed by any costing double the money. The "Druggist's Microscope" has been repeatedly advertised in the pages of this journal; and I am glad to learn that Mr. Slugg has every reason to be satisfied with the orders which he has received from his brother pharmacists.

The microscope and test-tube should be to the pharmacist what the touch-stone and nitric-acid bottle are to the goldsmith. If every pharmacist were able to detect adulteration in his drugs in a few minutes, we should hear no more of rhubarb containing 50 per cent. of flour, or magnesia, the principal constituent of which is China clay. Every pharmacist ought, then, to be as familiar with the use of his microscope as he is with the management of his weights and scales. Nature has provided us with the means of distinguishing nearly every plant by the use of this instrument, which, since the publication of Dr. Hassall's researches, has become the terror of the drug adulterator.

Microscopes are simple and compound. The simple microscope consists of one or more single lenses set together; and is used by holding in the hand, in the case of the lower powers, but with the higher powers it is generally mounted on a stand, with rack-work stage and reflector like the compound instrument. In the simple microscope the object itself is looked at, the eye and the lens being close to it. The ordinary hand-magnifier, and the Stanhope and Coddington lenses, are examples of this form of instrument. In the compound microscope the image of the object is formed by the object glass, and remagnified by the eye-piece. This arrangement not only gives a great increase of power, but allows a large field of view to be brought before the eye of the observer. These and other considerations give the compound microscope the pre-eminence. At first, the great draw-back to its use was its deficiency in achromatism; but the researches of Mr. Lester and Dr. Goring led to the achromatising of the object glass, which was the first of the rapid strides towards perfection made by this instrument during the last thirty years.

On examining one of Slugg's compound achromatic microscopes, it will be found to consist of a heavy stand of iron, upon which swings an arm carrying the body, the stage, and the reflector. The body is a brass tube blackened inside, into the top of which slides the eye-piece. The object glasses, which screw on to the bottom of this tube, are three in number, and when all together give the highest power. By removing the lowest one the power is lessened; and by using only one it is still further reduced. The order in which they are screwed together should never be altered, as they work best in the position in which they are placed by the maker. It is of great importance that they are kept perfectly free from dust. A few shreds of wash-leather of the finest quality should be kept in a pill-box for cleaning them. Before rubbing them with the leather, they may be breathed upon, but no whiting or liquid of any kind should be used, as each object glass, being achromatic, is a very delicate piece of workmanship, consisting of two lenses of flint and crown-glass cemented together by Canada balsam. When not in use they should be kept in the little box provided for the purpose. Great care must be taken in focussing not to screw them down upon the object, as the

destruction of the latter and the scratching of the object glass would most likely be the result. The body of the microscope should be wiped out now and then with a clean silk handkerchief, care being taken to leave no flue behind. The eye-piece consists of two plane-convex lenses; the one nearest the eye being called the eye glass, and the other the field glass. Between them is inserted a diaphragm, which limits the size of the field to that portion which is perfectly distinct. The glasses should be kept constantly wiped with a clean piece of wash leather kept for the purpose. Their inner surfaces seldom need cleaning. The body is attached to the rack-work rod by a small bar, and is moved up and down by means of the pinion. The pinion should be moved very gently and slowly, being one of the most delicate parts of the microscope. If it works loose the screw at the back should be turned, very slightly indeed. The stage requires no explanation, its use being obvious. The mirror, which should always be kept perfectly clean, consists of a silvered concave reflector on one side and a plane one on the other. The former gives the strongest light.

Great difficulty is often experienced in using the mirror in directing the light through the object; but if the reflection be watched on the *under* side of the stage, the proper amount of illumination may be easily obtained. The light from a white cloud is the best; but except the day be very dull, there is generally light enough for all purposes. Direct sun-light should never be used. At night, a good lamp placed at three or four feet from the reflector affords good illumination. If a candle is used, it should be at least within a foot of the microscope. For the low powers the lamp or candle should be placed farther off. Much depends upon the intensity of the light, and on the direction of the rays reflected by the mirror. In examining any object, different degrees of illumination should be tried, and the mirror should be slightly tilted so as to light only the edge of the field. By this means markings on objects invisible by direct light are often brought into view.

For the preparation and examination of objects the following will be required :—

A number of *glass slides*, 3 in. × 1 in., which may be procured of Claudet and Houghton, High Holborn, London, ground at the edges, at 12*s.* per gross. There is no economy in using bad glass, many fine preparations being spoilt by blebs and bubbles.

Thin glass cut to sizes. This may be had from the same firm cut to different sizes round and square, at 1*s.* per ¼ oz. The ¾-in. square is a very useful size.

Needles set in handles for tearing to pieces vegetable and animal tissues.

Glass rods drawn out to the ⅛-in. diameter are very useful for conveying drops of fluid to the slide.

Distilled water for the examination of objects and for washing slides. All objects should be examined both dry and in water. The characteristics of the various starches, for instance, are hardly to be perceived until they are immersed in fluid.

To the reader who already possesses a "Druggist's Microscope" I have said enough, I trust, to start him as a minute philosopher, and to the reader who does not, to induce him to order one forthwith.

When I began this article I intended saying a few words on the application of the microscope to the detection of adulteration; but I find that the most meagre account of this very important matter would necessitate woodcuts of an elaborate kind, and carry me far beyond proper limits. The following examples of how adulteration is detected must, therefore, suffice :—

Tobacco is one of the most adulterated articles used. On examining a portion of the leaf it will be found that the hairs growing on it are clubbed at the end something like a mushroom. If any other shaped hairs are found in a suspected sample it may be safely concluded that the suspicion is correct. In the same way the purity of arrow-root may be examined, the starch grain of the Maranta, which is genuine arrow-root, being different in size and shape to the starch grain of the potato or any other plant. Wheat flour may be detected in honey by the broken pieces of cellular tissue, and from the grains of wheat starch, which are very characteristic in shape and size. For other examples I must refer the reader to Dr. Hassall's work, entitled, *Adulterations Detected*, which contains numerous engravings. Every pharmacist should study this book, and endeavour to verify by personal observation the statements made by its author. A useful table showing the more important articles of food and drink, and the substances employed for adulterating them, has lately been published by Griffin, Bohn, and Co. To those who wish to pursue their microscopic studies in other directions, I

can confidently recommend the following works:—*The Microscope and its Revelations*, by Dr. Carpenter (Churchill, 12*s.*); *Half Hours with the Microscope*, by Dr. Lankester (Hardwicke, 2*s.* 6*d.*); *How to work with the Microscope*, by Professor Beale (Churchill, 5*s.* 6*d.*); *Common Objects for the Microscope*, by the Rev. J. Wood (Routledge, 1*s.*)

CHEMICAL NOTES.

Separation of Iron from Alumina.—Mr. Wm. Johnson communicates the following method to the *Pharmaceutical Journal;* we can vouch for its accuracy, as we have for years employed it in the analysis of iron blast furnace cinders and clays. It is founded on the facts that tartaric acid prevents the precipitation of alumina, as it does of iron by ammonia, and that alumina is not precipitated as sulphide. The hydrochloric solution of the mineral is first evaporated to dryness, to separate the silica, re-dissolved in hydrochloric acid, with the addition of a little nitric acid to peroxidize the iron, then mixed with a considerable quantity of water, and tartaric acid added. This is then supersaturated with ammonia, when, if much alumina be present, part will perhaps be precipitated, which is filtered off. To the clear ammoniacal solution sulphide of ammonium is added, which precipitates the iron, as *sulphide,* leaving the alumina in solution.

Clay in Foreign Paper.—Professor Penny, of Glasgow, has pointed out, in a communication to the *Times* (May 22), the fact, that many kinds of foreign paper contain large quantities (full 30 per cent.) of fine white clay. Mr. Sutton, of Norwich, has confirmed this statement, and has expressed his belief that the abrading property of the gritty siliceous particles with which China clay is associated, would lead to a rapid destruction of the type employed for printing on such paper.

Sulphuric Acid.—The following details, concerning the latest improvements in the manufacture of sulphuric acid, are given in a new French work, edited by MM. Barreswil and Aimé Girard:—According to the usual system, a quantity of sulphur is burnt in contact with a current of air, by which means it is converted into sulphurous acid, which, together with a quantity of nitric acid, provided elsewhere, passes into a series of leaden chambers of considerable dimensions, where, by various re-actions, the sulphuric acid is definitively formed, ready to be delivered to the trade. One of the most important improvements is that which consists in heating the sulphurets of *iron*, *copper*, or *lead*, to extract their sulphur, instead of consuming sulphur in its pure state. M. Fremy has invented another process, that of decomposing *sulphate of lime* or common plaster by *silica*, or, in other words, sand. A mixture of plaster and sand, exposed to a strong red heat, is transformed into a silicate of lime, while the sulphurous acid, required for the formation of sulphuric acid, is evolved, together with oxygen. But the latest, and decidedly the most curious improvement, is that imagined by M. Schank, who mixes together equal quantities of *chloride of lead* and *sulphate of lime;* by double decomposition these bodies are transformed into *chloride of calcium*, which is soluble, and *sulphate of lead*, which being insoluble, falls to the bottom of the vessel. This precipitate is collected and washed, and then treated with an equal quantity of hydrochloric acid. Again a change takes place; *chloride of lead* is formed again, to serve for a new operation, while the remaining liquid is weak sulphuric acid obtained direct, which has only to be concentrated to become fit for use. In this method, therefore, the only substances lost are sulphate of lime and hydrochloric acid, the cost of which is trifling, while the chloride of lead is regenerated, and may be used again. [We are told that this process has been *imagined* by M. Schank; we strongly doubt, however, whether, in practice, such a decomposition of sulphate of lead could be effected by hydrochloric acid as to furnish an economical yield of sulphuric acid.]

Is Nitrogen, or is it not, an essential constituent of Steel.—This question is being actively discussed by French chemists, but many more experiments are necessary before it can be decided. M. Fremy declares that when hydrogen is made to re-act upon steel under certain conditions, it is always *de-steeled* by disengaging nitrogen in the form of ammonia. At a meeting of the Paris Academy of Sciences, May 13th, a paper was read by M. H. Caron, in which he gives the results of his experiments in this direction. On passing hydrogen gas rapidly, and at a high temperature, over steel, it was easy to see that its properties were

destroyed, at least on the surface of the bar. This phenomenon M. Caron ascribes to the impurities in the hydrogen employed, and not to the gas itself; if, for instance, the smallest quantity of moisture or air be present, the small quantity of carbon present in the steel must inevitably be removed. Passing hydrogen indeed in its ordinary state, that is, mixed with small quantities of moisture and air, over finely divided steel, is an excellent method of decarbonizing it. When the hydrogen was carefully purified, by passing it first through a solution of phosphoric acid, then over incandescent spongy platinum, by which all oxygen was removed, and any arseniuretted, phosphuretted, or siliciuretted hydrogen that might have been present was decomposed, and, lastly, over chloride of calcium to dry it, the steel lost none of its properties, neither did its weight undergo any alteration; it became hard, brittle, or elastic, according to the degree of tempering and heating, and although a quantity of nitrogen was obtained, less than $\frac{1}{33000}$ of the weight of the steel, it is evident that, even asuming that it came from the steel, it took no part whatever in its constitution. But to show how difficult, if not impossible, it is thoroughly to exclude all source of error, M. Caron made another experiment, in all respects the same as the first, except that *no steel was used*, and still obtained nitrogen. He expresses his conviction that the transformation of the steel into iron, in the experiments of M. Fremy, was due to the hydrogen he employed containing oxygen, and that the steel was *de-steeled*, not by losing nitrogen but by being decarbonized. M. Fremy, in a fifth communication to the Academy, made on the 20th of May, insists on the correctness of his theory; he says that the reason M. Caron failed in *de-steeling* his steel by dry hydrogen was, 1st, because the temperature he employed was too high, the ammonia, if formed at all, being instantly decomposed; 2nd, because hydrogen gas, when made thoroughly dry, loses its active properties. By attending to the temperature, and employing gas containing moisture, he confidently asserts that proofs of the presence of nitrogen in steel may be obtained; he admits, however, that the method is not sufficiently exact for a quantitative determination. As for the smallness of the probable amount of nitrogen, Fremy refers to the influence exerted by bismuth or lead on gold, when present in very minute proportions, $\frac{1}{10000}$ of either metal rendering the gold as brittle as antimony. Steel contains 99·2 per cent. of iron according to the analysis of Gay Lussac; it frequently contains, also, phosphorus, silicon, and manganese, so that the steel making ingredient, whatever it may be, is necessarily exceedingly small in quantity. M. Fremy suggests to those chemists who doubt the presence of nitrogen in steel, to isolate this element by means of *bichloride of copper;* an organic compound may thus be obtained which, when heated with lime, disengages abundance of ammonia. This nitrogenized organic compound is, he thinks, the true steel making agent. M. Boussingault, the well known agricultural chemist, has made some experiments on this very difficult subject. He found nitrogen in steel, but in very minute quantities; he found also sulphur, which, from the commencement to the termination of his experiments, did not cease to pass away in the form of sulphuretted hydrogen. He is still engaged in the investigation. The *Comptes Rendus*, of May 27th, contains a further communication from M. Caron. He does not deny that minute quantities of nitrogen may be found in steel, but he denies that it has any thing to do with the conversion of the iron, because he declares that, when every precaution was taken to prevent the access of nitrogen, and when the small quantities of that element, which iron may contain, were carefully removed by heating the metal to redness in a current of dry and pure hydrogen gas, he still obtained "cemented bars very malleable, becoming, after tempering, as brittle as glass, and resisting the action of the file perfectly," by heating the purified iron in a current of thoroughly purified protocarburetted hydrogen gas. Moreover, he says he can see no reason why Fremy failed in converting unpurified iron into steel by the action of carburetted hydrogen (seeing that the minute quantity of nitrogen which his theory requires, must have been present), except that his gas was not pure, and that he did not pay proper attention to the temperature and to the duration of the operation. According to M. Fremy's own showing, steel, when treated at a red heat with hydrogen gas, loses both nitrogen and carbon; what grounds then has M. Fremy for attributing the *de-steeling* to the loss of nitrogen more than to the loss of carbon? On the whole, the experiments of M. Caron, which appear to have been conducted with very great care, go to show that, by removing nitrogen *alone* from steel, its properties are in no way affected, and that it is not this element, but carbon, that constitutes the difference between iron and steel.

HENRY M. NOAD.

XANTHOXYLUM FRAXINEUM.

Synonyms.—Prickly Ash, Prickly Yellow Wood, Toothache Tree.

Botany.—According to Dr. Lee, two kinds are indigenous to the United States, and are termed *Americanum* and *Carolinianum*, or Northern and Southern Prickly Ash. The northern variety is a shrub from five to ten feet high, having alternate branches covered with sharp scattered prickles. The flowers appear before the leaves, and blossom during the months of April and May. It is polygamous (some shrubs bearing both male and perfect flowers, others only the female) and grows in moist and shady places. It is a member of the family *Xanthoxylaceæ*—the Prickly Ash order, or Xanthoxyls, an order closely allied to Rutaceæ—the Rue family; and like it, belonging to the class Exogens, subclass Thalamifloræ. Every part of the plant possesses aromatic and active principles; and the leaves and fruit abound in a highly fragrant volatile oil, resembling that of the lemon in odour. It is contained in little vesicles situated on the surface of the capsule and the margins of the leaves. The bark, which is the officinal portion, occurs in the shops in more or less quilled pieces; it possesses little or no odour, has at first a sweetish slightly aromatic taste, which becomes bitterish, and ultimately permanently acrid. It is said to yield a yellow dye.

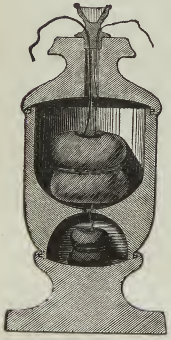
Chemistry.—Its chief constituents are a peculiar principle termed *Xanthoxylin*, volatile oil, a greenish fixed oil, resin, gum, and colouring matter. Xanthoxylin, the active principle, is described as a neutral, crystalline substance, very similar to Piperin in its physical and sensible properties; it is prepared by Messrs. Tilden and Co., of New Lebanon, New York.

Medicinal Properties.—In America the Prickly Ash is regarded as a very valuable stimulating tonic; and some of its preparations have recently been introduced to the notice of practitioners in this country. It is said to be a highly valuable medicine in secondary and tertiary syphilis; and as an alterant, to be regarded by many as more efficient than sarsaparilla or most of the vegetable alteratives. Syphilitic sores and malignant ulcers are stated to speedily improve under its internal and external use. It is said to have proved useful in scrofulous diseases, and, in conjunction with alkalies, in cutaneous diseases and atonic gout. It is a popular domestic remedy for chronic rheumatism; and Dr. Bigelow states, that he effectually removed this complaint in the short space of one day by doses of from grs. x. to grs. xx. Eberle also testifies strongly in its favour. As a domestic remedy it is employed for the relief of flatulence and colic, and its administration is frequently followed by prompt success. It is also employed in the form of decoction as an emmenagogue. Salivation is stated to sometimes follow its long continued use either externally or internally. It is valuable in hepatic derangements, and useful in low typhoid fever. When first swallowed, it is said to cause a sensation of heat in the stomach, followed by general arterial excitement, and a tendency to diaphoresis. A pricking sensation throughout the body extending to the limbs, similar to that caused by strychnia, is said to be sometimes experieneed.

Preparations and Doses.—The following are mentioned by Tilden and Co.:—Fluid Extract, gtt. xv to gtt. xlv; Xanthoxylin, gr. ij to grs. vj. Pills of Xanthoxylin, gr. j each. Tincture, ʒss to ʒiss. Formulæ for a compound tincture and powder, and for a clyster and infusion are also given by the same writers. The oil of Xanthoxylum is prepared by Keith and Co., of New York, and is stated to be a useful and reliable preparation: dose, from gtt. ij to gtt. v.

Soldering Aluminium.—The pieces to be soldered must be prepared in the same manner as objects are treated for soldering with tin, viz., by a "tinning;" but it is indispensable that this "tinning" must be done with the solder itself. The pieces are afterwards joined together and exposed to the flame of a gas blow-pipe, or to any of the ordinary sources of heat used in such cases. In order to unite the solderings, small tools of aluminium are used. The use of tools of copper or brass must be strictly avoided, as they would form coloured alloys with the aluminium and the solder. It is of the greatest importance never to use any flux to cause the solder to melt, as all those at present known attack aluminium and prevent the adhesion of the pieces to be soldered. The use of the little tools of aluminium is an art which the workman must acquire by practice; in fact, at the moment of fusion the solderings must have friction applied, as they melt suddenly in a complete manner. Solders of different compositions and degrees of fusibility have been employed in soldering aluminium. The one usually preferred, particularly for soldering small objects, is composed of 90 parts of zinc, 4 of copper, and 6 of aluminium. It is prepared by Messrs. Bell Brothers, of Newcastle-on-Tyne.—*Abridged from the Ironmonger.*

NOTES OF NOVELTIES



DOUBLE TWINE BOX.

We have to call attention to a very ingenious modification of the ordinary counter twine box. It consists, as shown in the sectional view, of three parts, forming two distinct cavities, adapted to the reception of coarse and fine twine.

The different parts are fastened together by short projecting pins, openings, corresponding to their positions, being cut in the overlapping rims, so that the box can be taken apart without trouble; consequently it is not subject to the inconvenience of becoming fixed, as in the ordinary arrangement, where the lid is fastened with a screw.

The convenience of having stout and fine twine in the same box is too evident to require description; time and trouble are so obviously saved by the arrangement, not to speak of the economy of space, in having one box instead of two on the counter.

The top is furnished with a guarded cutter. The whole is formed of stout, heavy wood, not liable to overset, and is in a very elegant and artistic form.

WARNER'S HIGH PRESSURE THERMOMETER AND VACUUM GAUGE.

Fig. 1.
High Pressure Thermometer.

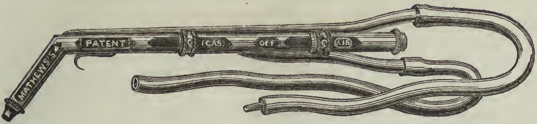
We have had recently submitted to our notice the above very simple and compact instruments. The first is designed for measuring high temperatures and pressure. It consists of a mercurial thermometer (fig. 1), graduated from the boiling point upwards; this is enclosed in a brass tube, so arranged that it can be screwed into any boiler, and the bulb being exposed to the heated steam, gives the internal temperature. On the opposite side of the scale is a column showing the pressure on every square inch of internal surface, corresponding to the temperature. The tube enclosing the scale is double, so that, by turning the outer part, the scale is at once covered in and protected from any accidental injury.

The Vacuum Gauge (fig. 2) is formed of a U-shaped tube, the two branches of which are shown in the diagram; the one to the right is closed above. The left branch turns upon itself at the top, and running down at the back of the instrument, communicates, through the stop-cock, with the vacuum-pan. The right branch is perfectly filled with quicksilver, which is kept in by the atmospheric pressure; or, attaching the apparatus to the vacuum-pan, from the decreased pressure, allows the mercury to fall by its own weight, when it consequently rises in the left hand tube to an extent corresponding with the degree of exhaustion. There is an index, which can be set to any height required, so that the operator can, at a glance, read off the degree of exhaustion at which he is working. The whole is protected by a revolving outer case, in the same manner as the thermometer.

The simplicity of these instruments, and the small risk they afford of being put out of order, must render them very advantageous to manufacturing chemists and others who require similar indicators. They are manufactured by Mr. Warner, of Fleet-street.

Fig. 2.
Vacuum Gauge.

MATHEWS'S GAS BLOW-PIPE.



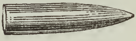
The above represents a new Gas Blow-pipe, invented by Mr. Mathews, of Drury-lane. It is furnished with two flexible Indian-rubber tubes, one of which is connected with the gas supply; the other has a mouth-piece, through which the breath is blown. Both tubes open at the extremity of the instrument, the opening of the air tube being in the centre of that supplying the gas, which is external.

The great peculiarity of the instrument is the arrangement of two sliding valves, which regulate the supply of the gas and air to any required amount, so that a large flame for coarse work, or a small one for finer purposes, can be obtained. These slides, which are marked "gas" and "air" in the wood block, are readily moved by the finger, so that the character of the flame can be varied without removing it from the article which is being heated.

The instrument is exceedingly effective, giving an intensely powerful flame of the exact size and character required for any particular purpose; it is also convenient in use, the flexible tubes enabling the flame to be applied in any direction. The superiority for almost all uses over the ordinary mouth blow-pipe used with a gas flame is evident. For chemical purposes it is especially adapted, as the flame can be changed from an oxidating to a de-oxidating one, or *vice versâ*, in an instant; and any required kind or size of flame can be maintained steadily, without variation, for a length of time.

TOUGH LUNAR CAUSTIC POINTS.

We have had forwarded to us specimens of a very useful improvement on the ordinary fused Lunar Caustic. The specimens are cast in small conical points, of the size represented in the annexed wood-cut, each being enclosed in a separate glass tube.



The great peculiarity distinguishing these points is that they contain a small addition of adhesive material, to the extent of two per cent.; this renders them perfectly tough, and they can be cut and pointed as readily as a piece of slate pencil. The material added does not interfere with the solubility of the nitrate of silver, nor with its action as a caustic, but renders it much more convenient and less wasteful in use. We do not doubt but that this improvement, though apparently in a trivial matter, will be found of great convenience to the medical profession. The points may be obtained through the usual wholesale channels.

COD LIVER PILLS.

In our number for January last we noticed a very promising invention, having for its object the concentrating of the active principles of cod liver oil in the form of an extract to be administered in pills. We can now lay before our readers the analysis of this extract, which has been made for the Academy of Medicine of Paris, by Dr. Garreau, Professor of Chemistry at the Imperial School of Medicine of Lille.

Ichthyoglycine—hepatic glucogen and azotized products	50·000
Acetic, lactic, and butyric acids	6·000
Phosphoric acid	2·090
Sulphuric acid	0·200
Chlorine	1·525
Iodine	0·054
Bromine	trace
Soda	1·170
Potash	0·211
Magnesia	0·366
Lime	0·510
Propylamine	2·545
Ammonia	2·862
Extractive matter undetermined, gadin, &c., &c.	10·620
Water	21·847
	100·000

It will be seen from this, how very rich the new remedy is in those active and soluble organic substances, such as propylamine, gadin, &c., to which the best authorities are now

agreed in ascribing the remedial virtues of cod liver oil, although they are found in it in such minute proportions as hardly admit of separation. Ichthyoglycine, which constitutes one-half of the cod liver extract, is a new substance; it does not occur in cod liver oil. Dr. Garreau and other eminent authorities are, however, of opinion that it possesses greater curative properties than any of the other principles contained in the liver of the cod. The conclusion these gentlemen have arrived at from close study of the whole subject is, that cod liver oil owes its remedial effects entirely to the very small portion of some of them, which it carries simply as a vehicle, and that the association of these with fatty matter, instead of being an advantage, is a decided drawback to their action, over and above those of the disagreeable taste and nauseating properties of the oil. The cod liver extract is formed from those elements of the livers which are soluble in water. The oil carries off a very minute portion of some of them, and its goodness is in proportion to the quantity which it takes up. Despinoy, the inventor, is now, we understand, manufacturing the cod liver extract on a large scale at Lille, and we believe that it is already introduced in this country. Should it turn out to have no other advantage than that of permitting those who have hitherto been unable to make use of cod liver oil to have the benefit of the important remedial principles contained in the livers of the cod, it must prove a great boon to thousands of invalids and sufferers.

THE MONTH

TRADE CHANGE.—In consequence of continued ill health, Mr. F. Simpson, of the Borough, has retired from business, and transferred his stock, &c., to Messrs. Morgan Brothers, who have, we believe, also engaged his principal assistants.

INTERNATIONAL EXHIBITION, 1862.—Her Majesty's Commissioners have given notice, that no demands for space, either from local committees or individual exhibitors, in the United Kingdom, Isle of Man, or Channel Islands, will be received after Tuesday, 1st October, 1861, and that the allotment of space will then be made on the returns sent in up to that date. Where no local committees are formed, provincial applications for space will be referred to, and determined by, national or metropolitan trade committees.

POISONINGS.—On the 31st ult. an inquest was held at Paddington, on the body of George Cooper, aged forty-five. The deceased had been an out-patient at St. Mary's Hospital for pain in the face, caused by carious teeth. On the day preceding his death an unusually severe attack of neuralgia made him visit Dr. Sieveking, who prescribed a pill containing one grain of acetate of morphia. He took the pill at about eleven o'clock at night, and at three in the morning he fell asleep; his wife could not succeed in waking him until eight, when he appeared to be in a highly excited state, and made a strange noise in his mouth; he was removed to the hospital in an insensible state, and, though all conceivable remedies were used, he expired at four P.M. Professor Rodgers, a gentleman unconnected with the hospital, made a post-mortem examination of the deceased, and found the kidneys in a highly diseased state. No suspicion had been entertained that the deceased was suffering from an affection of the kidneys; and in the absence of such a disease, the pill which caused his death would have been a safe remedy. The jury returned a verdict, "That death had been caused by misadventure, congestion of the brain having been produced by morphia taken as a medicine."—An inquest was lately held at Sheerness, on the body of Louisa Smith, a child aged three years and ten months. The principal witness, Frederick Smith, a private in the Royal Artillery, deposed that the deceased was his sister, and that she and his mother went with him to Mr. Hunt's photographic establishment in Mile Town. He sat for his likeness, and when it was taken he asked Mr. Hunt for a drink of water. Mr. Hunt having finished the likeness at his room, he went to his residence across the road to cut the glass on which the portrait was taken, and to get some water for witness. The building in which the likeness was taken was divided into three parts,—the chemical room, the waiting room, and that in which the likenesses are taken,—all leading from one to the other. Witness was sitting in the waiting room, brushing his hair, with his mother, when the deceased, who had been playing about, came rushing into the room from the part where Mr. Hunt kept his chemical preparations, spitting something from her mouth, and saying it was nasty. His mother, supposing the child had taken poison, caught her up directly and ran across the road with her to Mr. Hunt, whilst he ran for a doctor, and found Mr. Keddell. The child slipped away from him and his mother whilst he was getting a brush, and she could not have been absent for more than half a minute. As deceased was being carried across the road by her mother she said, "Don't whip me, mother; I thought it was water that Fred had been drinking of." Mr. John Staples Keddell deposed that he found deceased greatly convulsed, and her features very much distorted, as was usually the case with poisoning from prussic

acid, to which cyonide of potassium was perfectly analogous in its properties. He saw the child about five minutes after it had taken the poison, and if he had been there immediately he could have given no antidote for it. The child died in about three-quarters of an hour. The coroner remarked that he did not see that any blame could be attached to any one, as the chemicals were kept in a room where nobody but the operator had a right to enter. It appeared to him to be a purely accidental occurrence. The jury expressed a similar opinion, and returned a verdict accordingly.—An inquest has been held at Kingsland, on the body of Daniel Smith, an artificial firework maker. It was stated in evidence, that the deceased had been in the habit of taking cream of tartar as an aperient, and kept arsenic, which was largely used in his business, in the same box with the cream of tartar, of which he intended to take a dose, but by mistake swallowed a large quantity of arsenic. The usual antidotes were administered, but the deceased continued to linger in great pain until death terminated his sufferings. The jury returned a verdict of "Accidental death."—An inquest has been held by Mr. Bedford, on the body of Susan Berridge, aged thirty-two, residing at 3, Upper Eaton-street, Pimlico, who died from the effects of prussic acid. Numerous witnesses were examined, but their testimony threw no additional light upon the subject. The jury therefore returned the following verdict:—"That the deceased came by her death from prussic acid, but there was no evidence to show how or by whom administered."

Poisonous Cosmetics.—At a recent sitting of the Paris Academy of Medicine, Dr. Réveil read a paper on the necessity of preventing perfumers from selling poisonous or dangerous articles, which should be exclusively left to the responsibility of regular chemists, and not sold without a physician's prescription. "To show the danger there is in allowing the unchecked sale of certain compounds," he said, "I need but state that arsenic, the acid nitrate of mercury, tartar emetic, cantharides, colchicum, and potassa caustica form part of their ingredients. The kind of soap called lettuce soap, which is sold with the announcement that it has been acknowledged by the Academy, does not contain the slightest trace of lettuce. This and other soaps are all coloured green by the sesqui-oxide of chromium, or of a rose colour by the bi-sulphuret of mercury known as vermilion. Some which are cheaper contain 30 per cent. of insoluble matter, such as lime or plaster, while others contain animal nitrogenous matter, which, having escaped the process of saponification, emits a bad smell when its solution is left exposed to the air. The various toilet vinegars are so far noxious that, being applied to the skin still impregnated with soap and water, they give rise to a decomposition, in consequence of which the fatty acids of soaps, being insoluble in water, are not removed by washing, become rancid, and cause a chronic inflammation of the skin. The preparations employed for hair-dye under the pompous names of 'African Water,'' Florida Water,' &c., all contain nitrate of silver, sulphur, oxide, and acetate of lead, sulphate of copper, and other noxious substances. All cosmetics for removing hairs or freckles are dangerous; the *lait antéphélique*, for instance, contains corrosive sublimate and oxide of lead. Were a chemist to deliver such a remedy to a customer without a regular prescription, he would be liable to a fine of 6,000f."

Careless Driving and Narrow Escape.—Under this heading, the *Express*, of last Friday, gives the following description of the almost miraculous escape of one of our neighbours:—Thomas Young, a servant in the employment of Mr. Harman, town carman, of New Union-street, Moorfields, and George Guthrie, his assistant, were charged before the Hon. G. C. Norton on the following charge:—Mr. William Vaughan Morgan, a gentleman residing at Sangley Lodge, Lewisham, said that on the previous night, about 10 o'clock, while proceeding along the Old Kent-road in his brougham, accompanied by Mrs. Morgan, he heard a loud crash in front, and on looking in that direction saw his coachman in the act of falling from his box, from which he had been thrown by the violent collision of a cart then driving off as fast as the horse could go. He (Mr. Morgan) made an effort to get out of the brougham, but found the handle on the off-side had been broken off, and he then called out to the persons present to follow and stop the cart, and this, after some time, was accomplished. The witness further said, that so violent was the collision that the whole of the traces were snapped off, and the horses, two spirited and valuable animals, started off with the carriage-pole between them, and ran four or five miles before they could be secured, so that it was almost a miracle that in their progress they had not killed several persons. They were themselves very much hurt and cut about the legs; the brougham was seriously injured, but he could not at that moment estimate the damage done. In conclusion, Mr. Morgan, in reply to the question of Mr. Norton, said that Mrs. Morgan, as well as himself, escaped injury, but added that, under the circumstances, it was most fortunate that they and their servant were spared to support the charge. Nathaniel Clifford, the coachman of the last witness, who had received a severe bruise on the left shoulder, corroborated his master's statement, and said the prisoners would have got off if he had not jumped on a cab and driven after them. Other witnesses spoke to the violent conduct of the prisoners when stopped, and their whipping their horse as hard as they could to avoid apprehension. Mr. Norton observed that he scarcely knew an instance of more violent or outrageous conduct on the part of two drunken men, and remanded the prisoners, on bail, to a future day. On Saturday the case was again gone into, and the prisoners sentenced to two and four months' imprisonment respectively.

Correspondence

Trade Cutting.

Hatherleigh.

Sir,—Having seen some letters on "Trade Cutting" in the *Chemist and Druggist*, and considering that the system of underselling ought to be discountenanced, especially by our trade, I am induced to send you an advertisement which I cut out of the *Lynn Record*, in which you will perceive that some of the articles are offered at less than cost price; aloes, for instance, at 2*s*., 2*s*. 6*d*., and 3*s*. per pound. I should not be surprised to see antibilious pills advertised for 2*d*. per dozen in the next number of the *Lynn Record*.

Hoping you will discourage such untradesman-like proceedings, I am, yours, &c.,

Chemist.

[We have compared the price list sent with our Price Current, and must admit that our correspondent's strictures are well-founded.—Ed.]

To the Editor of the "Chemist and Druggist."

The Right to Prescribe.

Bedford, May 6th, 1861.

Sir,—I have been much gratified in reading several articles lately written in the *Chemist and Druggist*, and am glad to find we have gentlemen connected with the United Society of Chemists and Druggists, able and willing to defend their cause and advocate their rights.

I make no pretensions to writing; but my attention has been particularly directed to a letter of your correspondent, "J. B.," in your April number, on the right of chemists to prescribe. I consider that the interference with this right, which has been enjoyed from time immemorial, is unjust to the chemist and productive of great inconvenience to the public; yet I fear our friend is under a delusion, to suppose that that right is still preserved to us; I believe it is not. It is true that the Apothecaries' Act of 1815 provides that it should not prejudice, or in any way affect the business of a chemist and druggist in the buying, preparing, compounding, dispensing, &c., but there have been several actions maintained against chemists for prescribing. I refer you more particularly to two cases, one, that of "Dixon *v.* Bell," where the chemist could not recover his debt because he had prescribed illegally;* and the other, that of "The Apothecaries' Company *v.* Broadbent," where an action was brought against a chemist for prescribing behind his own counter.† I saw a private letter from Mr. Broadbent, in which he stated he had been a chemist and druggist for many years, that this trial injured him much, and that he was, in consequence, obliged to part with his business and retire.

I sympathized with the case at the time, and suggested to the late worthy editor of the *Pharmaceutical Journal* that a subscription should be set on foot to assist Mr. Broadbent in obtaining a new trial, and that the action should be defended on *public grounds;* but, unfortunately, he was not a member of the Pharmaceutical Society, neither did the worthy president of that society approve of chemists prescribing. At some future day, no doubt, this case will be quoted as a precedent against some other unfortunate.

We find that laws are framed in Parliament, and our judges put their own construction upon them. From these cases it is clear that the subject is open to dispute, if the point is not already settled that chemists have no right legally to prescribe. I will also call your attention to the new Medical Act, 21 and 22 Vict., cap. 90, where it is enacted and provided, "That after the 1st of January, 1859, no person shall be entitled to recover any charge in any court of law, for any medical or surgical advice, or attendance, or for the performance of any operation, or for any medicine which he shall have *both prescribed and supplied*, unless he shall prove, upon the trial, that he is registered under this Act. *The Register is evidence in all courts.*" This appears clear enough—too clear for us poor prescribing chemists; either the medical profession stole a march on us, wilily introducing such a clause, or the Pharmaceutical Society must have been asleep, to allow such an Act to pass without strenuous opposition. But how could we expect the Pharmaceutical Society to take up such a cause, since their organ has invariably condemned chemists prescribing, and thus sacrificed our ancient rights and privileges. I have often thought London chemists have no idea what a country business is, or they never would advocate such impracticable measures, as that chemists should be dispensers of prescriptions only, little knowing how seldom a prescription finds its way into a country shop.

But to revert to the subject in question, "the right of chemists to prescribe." If they have have lost that right, what should be done to restore it to them? Surely it is high time some United Society of Chemists and Druggists was formed; and I hope every chemist in the kingdom will feel it both his *duty and interest* to join at once, without delay, the one that is now organised. This is a day of registration; why not let the chemists and druggists be registered as such, and if the public, from

* Reported in *Pharm. Journal*, vol. xv. p. 45.
† *Idem*, vol. xvi. p. 106.

ecessitous motives of economy, or from choice, iink proper to employ them as doctors in light cases of illness, what cause could there e for complaint? If the disease assumed a erious aspect, the patient would not trust imself to a chemist, but would send for a iedical man; or if the chemist perceived there 'as any ground for apprehension, he would dvise his customer to go to a medical man. urely, if chemists were permitted to prescribe when they had not those educational advanages which they now enjoy, they cannot be he less competent to do so when better eduated. I believe, if chemists were strictly prohibited from prescribing, and the thing practically carried out, the public would not submit to the monopoly of the medical profession. The poor, and very many of the highly respectable middle class, with limited means, cannot afford to send for a doctor every time they are slightly indisposed.

Please, at your leisure, read the preface of "Gray's Supplement to the Pharmacopœia," third edition, 1824; also, "Historical Sketch of the Progress of Pharmacy," by the late Mr. Jacob Bell, published by Churchill, 1843.

I enclose my card, and subscribe myself,

An Old Pharmaceutical Chemist.

Notes and Queries

To our Readers.—We have published the whole of Dr. Noad's valuable communication on the Action of Various Kinds of Natural Waters upon Lead, as the coming in of hot weather has given additional importance to every question relating to the purity of water. In consequence of the length of this communication we must again postpone the publication of the concluding portion of Mr. Reynolds' treatise on the New Dyes obtained from Coal Tar until next month. Several queries must remain unanswered until we have more space at our disposal.

Lupulin.—R. J. (Manchester). This is the active principle of the Hop (Humulus Lupulus). It is a valuable remedy in Neuralgia. An American writer tells us, that twenty grains of lupulin, and ten grains of prussiate of iron, divided into two powders, and one taken night and morning, have cured a large number of cases of this disease.

Storm Glasses.—E. T. D. (Droitwich.)—The glasses usually termed Storm Glasses, which are sold as possessing the power of indicating approaching storms, are formed simply of a solution of camphor in neat alcohol. This solution is made of such a strength that part of the camphor remains in the form of plumose crystals, the quantity remaining undissolved, varying with the temperature and amount of light. Some saline bodies are usually added, to raise the specific gravity of the spirit to that of the crystals of camphor, so that whether these remain in the centre, float near the surface, or sink, depends on minute alterations of temperature; hence the camphor is sometimes at the bottom of the bottle, and at other times diffused through the liquid. The weather-predicting qualities of these glasses are entirely imaginary,—a fact of which any person may readily satisfy himself by looking at those suspended in the opticians' windows, where they will all be found to give different indications. Should our correspondent wish to make them, and test their accuracy for himself, the following directions may be useful:—Camphor, $2\frac{1}{2}$ drs., rectified spirit, 11 fl. drs.—dissolve; nitrate of potash, muriate of ammonia, of each 38 grs., water, 9 fl. drs.—dissolve. Mix the two solutions, pouring the latter gradually into the former, and pour into a long tubular closely-stoppered bottle. If several vessels are filled with the same liquid, it will be found that their indications vary, even if they are hung side by side, owing to slight differences in their temperature, and the amount of light to which they are exposed.

Sale of Gunpowder.—"Pharmacist," who requests us to publish a digest of the new Act of Parliament relating to gunpowder, which will shortly come into force, is informed that we cannot afford space for any extracts from the Act, considering that comparatively few of our subscribers are dealers in gunpowder. We may, however, direct Pharmacist's attention to the subjoined communication which Messrs. Hall and Co. have received from their solicitors, and to an admirable digest of the Act, published in the April number of our contemporary, the *Ironmonger*.

1, Copthall-court, Throgmorton-street, London,
31st May, 1861.

Messrs. John Hall and Son,

Dear Sirs,—At your request we have carefully compared the new Act of Parliament relating to gunpowder, (23 & 24 Victoria, c. 139, 1861) with the previous Act under which your trade was regulated (12 George III, c. 61), and enclose a note of the particulars in which the new Act differs from the old one.

You will perceive that, so far as relates to the *keeping* and *storing* of gunpowder by dealers, the provisions of the new Act, instead of being more stringent than those of the old one, are really more liberal, and your constituents are certainly in error if they imagine that their position is prejudiced by the provisions of the Act coming into force on the 31st of August next.

We are, dear Sirs, yours faithfully,

Ware & Westall.

J. P. would feel obliged by any one informing him (either privately through the Editor or publicly through this Journal) where pure precipitated phosphate of lime can be bought, and the price per cwt.

TRADE REPORT.

London, June 13th, 1861.

On the 16th of last month the Bank Directors advanced the rate of discount 1 per cent., the quotation being 6 per cent. This rate has been well maintained since, owing to the continued withdrawals of specie for America; and there is every probability of a higher range, owing to the continued drain to that part. There have been fair arrivals from Australia and the Pacific, still the stock of bullion in the Bank of England is less than last month. Business, in all departments, continues extremely flat, and generally lower prices have been taken. Consols closed this afternoon at 89⅞ to 90 ex div. for money, and 90¼ ⅜ ex div. for the account.

Business in chemicals continues extremely limited, and prices for most articles are in favour of the buyer. Sales in tartaric acid have been made at 1*s.* 10*d.* and the article is rather better. First quality oxalic acid has been sold at 9¼*d.* to 9½*d.*, and seconds, 8½*d.*, which is also a shade firmer. There has been more doing in citric acid, at 1*s.* 9*d.* to 1*s.* 9¼*d.*, which is cheaper. Chlorate of potass is quiet at 10¼*d.*; so also is bichromate at 9½*d.*, and prussiate of potass at 1*s.* 1½*d.* and 1*s.* 2*d.* Sal acetos remains dull at 10*d.* Iodine continues dull at 4⅝*d.* for seconds, and 5*d.* for firsts. Cream of tartar is easier; sales of the best has been made at 6*l.* 5*s.* Soda crystals is dull at 4*l.* to 4*l.* 5*s.* ex ship. Soda ash 2⅛*d.* to 2¼*d.* Sulphate of copper is quiet at 31*s.* to 32*s.*, according to quality. Sal ammoniac more doing, 32*s.* 6*d.* to 33*s.* Canada pot ashes are quiet, 36*s.*, and pearl 37*s.* 6*d.* to 38*s.* per cwt. Turpentine declined to 42*s.*, but is now dull at 44*s.* Refined saltpetre is dull at 37*s.* to 38*s.*, which is lower. Linseed oil is quiet at 30*s.* per cwt.

The drug sales have been small, which have gone off with fair competition, and a fair quantity sold. A good parcel of China rhubarb sold at 2*s.* 7*d.* to 2*s.* 8*d.* per flat, and 2*s.* 4*d.* to 2*s.* 5*d.* per round, with some inferior at 1*s.* 3*d.* to 1*s.* 5*d.* A few lots good and fine Turkey opium sold at 18*s.* to 19*s.* Oil of Cassia is dull at 8*s.* 9*d.*, which is lower; and some sales have been made in aniseed, for oil, at 6*s.* 9*d.* Some sales of citronelle brought 4¼*d.* to 4½*d.*, which is cheaper. The common kinds of castor oil are rather dearer, other sorts steady. A large parcel of senna was bought in. Cubebs are cheaper, fair grey selling at 7*l.* to 7*l.* 7*s.* 6*d.* A few good and fine Cape aloes sold at 40*s.* to 42*s.* Shellac is 5*s.* to 10*s.* dearer, and in better demand. Gum olibanum is steady. Kowrie is rather dearer, and in demand. A large parcel of grey and Carthagena bark sold at former prices. In other goods no change.

PRICE CURRENT.

☞ *These quotations are the latest for* ACTUAL SALES *in Mincing Lane. It will be necessary for our retail subscribers to bear in mind that they cannot, as a rule, purchase at the prices quoted, inasmuch as these are the* CASH PRICES IN BULK. *They will, however, be able to form a tolerably correct idea of what they ought to pay.*

	1861. s.	d.	s.	d.	1860. s.	d.	s.	d.
ARGOL, Cape..per cwt.	90	0..	105	0	85	0..	104	0
French	60	0..	85	0	60	0..	80	0
Oporto, white	0	0..	0	0	0	0..	0	0
red	50	0..	0	0	50	0..	54	0
Sicily	85	0..	90	0	75	0..	80	0
Naples, white	85	0..	90	0	85	0..	90	0
red	0	0..	0	0	0	0..	0	0
Florence, white	95	0..	105	0	95	0..	105	0
red	95	0..	97	6	85	0..	95	0
Bologna, white	0	0..	0	0	125	0..	130	0
ARROWROOT,								
duty 4½d. per cwt.								
Bermuda ....per lb.	1	1..	1	3	1	3..	1	5½
St. Vincent	0	2¾..	0	6	0	2¾..	0	6¾
Jamaica	0	2½..	0	4½	0	2 ..	0	4
Other West India ..	0	2..	0	3¼	0	2..	0	3¼
Brazil	0	1½..	0	2¼	0	1½..	0	2¼
East India	0	1¾..	0	2½	0	1¾..	0	2½
Natal	0	2½..	0	8	0	3½..	0	7½
Sierra Leone	0	2½..	0	3½	0	2½..	0	3½
ASHES,......per cwt.								
Pot, Canada, 1st sort	36	0..	0	0	32	0..	33	0
U. S., 1st sort	0	0..	0	0	0	0..	0	0
Pearl, Canada, 1st sort	37	6..	38	0	32	0..	32	6
U. S., 1st sort	0	0..	0	0	0	0..	0	0
BRIMSTONE,								
rough ......per ton	£8	0..	0	0	£10	0..	0	0
roll	13	10..	14	0	14	10..	15	0
flour	0	0..	15	10	16	10..	17	0
CAPERS,								
French......per cwt.	£3	0..	£5	0	£3	10..	£6	15

CHEMICALS	1861. s.	d.	s.	d.	1860. s.	d.	s.	d.
Acid—Acetic, per lb.	0	4 ..	0	4½	0	4..	0	4½
Citric	1	9 ..	1	9¼	2	2 ..	0	0
Nitric	0	5..	0	5½	0	5..	0	5½
Oxalic	0	8½..	0	9½	0	8¼..	0	0
Sulphuric	0	0¾..	0	1	0	0¾..	0	1
Tartaric, crystal	1	10 ..	0	0	1	11½..	2	0
powdered.	1	11..	0	0	2	1..	0	0
Alum ......per ton	£6	0	£0	0	£7	5	£0	0
powder	7	10..	0	0	8	10..	0	0
Ammonia, Carbon, lb.	0s.	5¾d.	0	6d.	0s.	6½d.	0	6¾
	£	s.	£	s.	£	s.	£	s.
Sulphate ..per ton	13	10..	14	0	15	0..	15	10
Antimony, ore......	16	0..	17	0	16	0..	17	0
crude, per cwt..	30s.	0d.	40s.	0d	35s.	0d.	37s.	0d
regulus	52	0..	53	0	50	0..	52	0
French star	51	0..	0	0	52	0..	56	0
Arsenic, lump	17	6..	18	6	18	0..	0	0
powder	9	0..	10	6	12	6..	14	0
Bleaching Powder ..	9	0..	0	0	11	3..	0	0
Borax, E. I. refined..	35	0..	45	0	44	0..	64	0
British	65	0..	0	0	65	0..	70	0
Brimstone, roll......	13	10..	14	0	14	10..	15	0
flour	0	0..	15	6	16	10..	17	0
Calomel ......per lb.	2	10..	0	0	2	10..	0	0
Camphor, refined ..	3	1..	3	2	2	3..	0	0
Copperas, green, pr tn.	65	0..	0	0	65	0..	0	0
Crrsiv. Sublimate, lb.	2	0..	0	0	2	1..	0	0
Green, Emerald, pr lb.	0	9..	0	11	0	9..	1	0
Brunswick, cwt..	14	0..	42	0	14	0..	42	0
Iodine, dry ..per oz.	0	4½..	0	5	0	6 ..	0	0
Ivory Blk. drop pr. ct.	8	0..	9	0	0	0..	0	0

PRICE CURRENT—*continued.*

	1861.	1860.
CHEMICALS.	s. d. s. d.	s. d, s. d.
Magnesia, Carbon. ct.	42 6..45 0	42 6..45 0
Calcined, lb.....	1 6.. 0 0	1 6.. 0 0
Minium, red, per cwt.	22 6..23 0	23 6..24 6
orange	35 0.. 0 0	36 0.. 0 0
Potash, Bichrom., lb.	0 9½.. 0 0	0 11 ..0 0
Chlorate........	0 10¼.. 0 0	0 11.. 0 0
Hydriodate ..oz.	0 5¼.. 0 5½	0 7.. 0 0
Prussiate ....lb.	1 1½ 1 2	1 3.. 1 3½
red..	2 2.. 0 0	2 3.. 0 0
Precipitate, red per lb.	2 9.. 2 10	2 10.. 2 11
white....	2 10.. 0 0	2 10.. 0 0
Prussian Blue	1 6.. 1 10	1 6.. 1 10
Rose Pink ..per cwt.	29 0..30 0	29 0..30 0
Sal-Acetos ....per lb.	0 10½ 0 11	0 11 ..0 0
Ammoniac, cwt. British ..	32 0..33 0	32 6..34 6
Epsom	8 0.. 8 6	8 0.. 0 0
Glauber	3 6.. 5 6	5 0.. 5 6
Saltpetre, refined....	37 0..38 0	41 6..42 6
Soda, Ash, per degree	0 2⅛.. 0 2¼	0 2⅝.. 0 2⅞
Bicarbonate ...cwt.	13 0..13 6	15 6..16 0
Crystals....per ton	£4 7/6 .£4 10/	£5 5/ .£0 0
Sugar Lead, white, ct.	37s. 0d. 38s. 0d.	38s. 0d. 39s. 0d.
brown..........	28 0.. 0 0	28 0.. 0 0
Sulphate Quinine, oz. British in bottle ..	7 2.. 7 6	6 8.. 7 9
Foreign	6 9.. 7 0	6 3.. 6 6
Sulphate Zinc ...cwt.	14 6..15 0	14 6..15 0
Verdigris ....lb.	1 3.. 1 5	1 8.. 2 0
Vermillion, English..	3 0.. 3 4	3 6.. 3 4
China....	2 3.. 2 8	3 0.. 0 0
Vitriol, blue or Roman per cwt...	31 6..32 0	35 0.. 0 0
CHICORY....per cwt. Foreign (duty, 6s.) ..	17 0..17 6	12 6..13 6
COCHINEAL...per lb.		
Honduras, black....	2 6.. 4 6	3 8.. 5 3
silver	2 4.. 3 0	3 2.. 4 0
pasty	2 1.. 2 3	2 10.. 3 1
Mexican, black......	2 6.. 3 2	3 6.. 4 3
silver......	2 3.. 2 6	3 0.. 3 3
Lima	2 4.. 3 0	3 3.. 4 0
Teneriffe, black	2 7.. 3 6	3 7.. 4 1
silver	2 5.. 2 7	3 3.. 3 5
COCOA (duty 1d. per lb.)		
Trinidad, red, in bond......per cwt.	65 0..96 6	75 0..97 0
gray	56 0..64 0	68 0..74 0
Grenada............	55 0..60 0	60 0..70 0
Dominica & St. Lucia	54 0..56 0	62 0..63 0
Para	60 0..65 0	64 0..68 0
Bahia	52 0..54 0	52 0..54 0
Guayaquil	59 0..60 0	69 0..72 0
COFFEE, in bond (duty 3d. per lb.)		
Jamaica, good, mid. to f...............	73 0..106 0	72 0..94 0
low mid. & mid.	68 0..72 0	65 0..70 0
fine ordinary ..	65 0..67 0	62 0..64 0
good ordinary ..	62 0..64 0	59 0..61 0
ord. and triage..	50 0..60 0	46 0..59 0
Ceylon, Nat. gd. & f.	62 0..64 0	59 6..62 0
ordinary	57 0..61 6	55 0..58 6
Plantation, fine..	85 0..88 0	88 0..92 0
fine mid.	77 0..84 0	79 0..86 0
good mid.	72 6..76 0	75 0..78 0
middling	68 6..72 0	70 0..74 0
fi. ord. to low md.	65 0..67 6	64 0..69 0
mixed and triage	50 0..63 0	48 0..65 6
Malabar and Mysore	58 0..78 0	57 0..78 0
Madras	58 0..76 0	58 0..76 0
Tellicherry	64 0..90 0	62 0..88 0
Mocha, fine	110 0 120 0	115 0 122 0
garbled	93 0 105 0	94 0 115 0
ungarbled	62 0..100 0	62 0..86 0
Batavia, yellow	63 0..76 0	65 0..78 0
pale and mixed..	58 0..62 0	54 0..64 0
Sumatra............	52 0..56 0	50 0..52 0
Padang	55 0..61 0	54 0..60 0
African	70 0..85 0	80 0..90 0
Brazil, f. ord. & wshd.	60 0..70 0	60 0..70 0
good ord.	54 0..58 0	57 0..59 0
ordinary	50 0..53 0	51 0..56 0

	1861.	1860.
COFFEE.	s. d. s. d.	s. d. s. d.
La Guayra	60 0..76 0	62 0..78 0
Costa Rica, mid. to f.	67 0..80 0	68 0..84 0
good and f. ord.	60 0..66 0	62 0..68 0
Cuba, mid. to fine ..	67 0..80 0	68 0..82 0
f. ord. & f. f. ord.	63 0..66 0	62 0..68 0
ord. & good ord.	57 0..62 0	55 0..63 0
Porto Rico	60 0..78 0	62 0..78 0
St. Domingo........	58 0..63 0	56 0..65 0
DRUGS,	£. s. £. s.	£. s. £. s.
Aloes, Hepatic, pr. cwt.	3 10.. 9 10	3 10..10 0
Socotrine	6 0..24 0	5 10..25 0
Cape, good......	2 0.. 2 2	1 15.. 1 18
inferior ..	1 8.. 1 17	1 2.. 1 14
Barbadoes......	2 0..22 0	2 0..22 10
Ambergris, gray, p. oz.	34s. 0d. 42s. 0d.	30s. 0d. 42s. 0d.
Angelica Root. pr. cwt.	28 0..40 0	35 0..42 0
Aniseed, China star ..	70 0..78 0	98 0.. 90 6
German, &c.	26 0..40 0	32 0 42 6
Balsam, Canada, pr. lb.	1 3.. 0 0	0 10.. 1 0
Capivi	1 10.. 1 11	1 11.. 2 0
Peru.........	4 6.. 4 9	4 10.. 4 11
Tolu	3 6.. 2 9	3 10.. 4 0
Bark, Cascarilla, cwt.	24 0..49 0	30 0..46 0
Peru. crwn. & gry. pr. lb.	1 7.. 2 8	1 10.. 3 4
Calisaya, flat ..	3 10.. 4 0	3 4.. 3 9
quill ..	3 4.. 3 10	3 0.. 3 8
Carthagena	1 2.. 2 0	0 8.. 1 0
Pitayo	1 6.. 2 2	0 10.. 1 10
Red	2 0.. 6 0	2 0.. 6 0
Bay Berries, per cwt,	22 0..40 0	50 0..52 0
Borax...............	20 0..45 0	20 0..37 6
Tincal	32 0..50 0	30 0..45 0
Bucca Leaves ....lb.	0 4 .. 1 3	0 4½ 1 2
Burgundy Pitch, p. cwt.	0 0.. 0 0	0 0.. 0 0
Camomile Flowers..	40 0..80 0	140 0 190 0
Camphor, China....	240 0.. 0 0	160 0.. 0 0
Canella Alba.........	22 0..42 0	25 0..45 0
Cantharides ..per lb.	2 1.. 2 2	2 7.. 2 8
Cardmms. Mlbr. good	4 9.. 5 0	4 7.. 5 0
inferior ..	4 6.. 4 7	4 0.. 4 6
Madras ..	2 10.. 4 4	3 6.. 4 4
Ceylon ...	4 9.. 5 1	3 10.. 0 0
Cassia Fistula. pr. cwt.	20 0..35 0	28 0..36 0
Castor Oil, 1st pale, lb.	0 5¾ 0 6½	0 6⅓ 0 7
second	0 5¼ 0 5½	0 6.. 0 6½
infr. and dark	0 4¾ 0 5	0 5¼ 0 5¾
Bombay, in casks	0 4.. 0 4½	0 4.. 0 4¼
Castorum	1 0..28 0	5 0..20 0
China Root..per cwt.	9 0..10 0	9 0..10 0
Coculus Indicus	12 0..13 0	12 6..14 0
Cod-liver Oil, per gal.	4 6.. 5 3	4 9.. 7 0
Colocynth, apple, p. lb.	0 8.. 1 3	0 11.. 1 9
Colombo Root, per cwt.	15 0..47 6	12 0..46 0
Corosus Nuts, per cwt.	13 0..23 6	14 0..26 0
Cream Tartar, per cwt.		
French	125 0 127 6	142 6.. 0 6
Venetian	130 0.. 0 0	145 0.. 0 6
gray	122 6 125 0	120 6 122 6
brown..........	115 0 118 0	0 0.. 0 0
Croton Seed........	80 0 105 0	65 0..90 0
Cubebs	140 0 160 0	220 0 230 0
Cummin Seed	36 0..40 0	22 0..30 0
Dividivi............	12 0..14 0	11 0..13 0
Dragon's blood, reed.	£7 0 £14 0	£7 0 £14 10
lump	5 0..12 0	5 0..12 0
Galangal Root......	0 16.. 1 0	1 7.. 1 9
Gentian Root	0 15.. 0 17	0 16.. 0 17
Ginger, preserved, in bd.	s. d. s. d.	s. d. s. d.
(duty 2d. lb.) per lb.	0 6.. 0 7	0 9.. 0 9½
Guinea Grains. per cwt.	46 0..48 0	60 0..63 0
Honey, Narbonne ..	60 0..85 0	70 0..90 0
Cuba	25 0..40 0	22 0..32 0
Jamaica	24 0..58 0	23 0..58 0
Ipecacuanha, per lb..	3 6.. 4 0	4 0.. 0 0
Isinglass—		
Brazil...........	1 6.. 4 0	1 10.. 4 2
East India........	1 0.. 3 6	1 10.. 4 6
West India	3 2.. 3 9	3 10.. 4 3
Russian, long staple	12 0..13 0	12 0..13 0
leaf......	9 6..12 0	9 6..12 0
Simovia..	2 0.. 2 6	1 6.. 2 6
Jalap.............	3 10.. 4 4	3 8.. 4 0

PRICE CURRENT—*continued.*

DRUGS.	1861. s. d. s. d.	1860. s. d. s. d.
Juniper Berries, p. cwt.		
German and French	10 0..10 6	9 0.. 9 6
Italian	10 0..12 0	9 0..10 0
Lemon Juice, per deg.	0 1 .. 0 1⅛	0 0⅝.. 0 0
Lichen Islandicus, lb.	0 0.. 0 0	0 0.. 0 0
Liquorice ... per cwt.		
Spanish	83 0..90 0	83 0..93 0
Italian	85 0..95 0	90 0.. 98 0
Macaroni, Genoa, p.lb.	0 3.. 0 6	0 4.. 0 6
Naples....	0 4.. 0 5½	0 3.. 0 5½
Manna, flaky	3 0.. 3 9	4 9.. 5 3
small	1 6.. 2 0	2 6.. 2 7
Musk ....per oz.	26 0..34 6	22 0..27 0
Myrabolans, per cwt.	8 6..12 0	9 6..14 0
Nux Vomica........	8 0.. 9 0	13 0..14 0
Opium, Turkey	14 0..19 0	22 0..24 0
Egyptain....	6 0..13 0	6 0..14 0
Orris Root.. per cwt.	27 0..30 0	30 0..36 0
Pellitory Root	0 0.. 0 0	0 0.. 0 0
Pink Root....per lb.	1 3.. 1 4	1 0.. 1 3
Quassia (bit.wd.) ton	£3 10.. 4 0	£9 0 £10 10
Rhatania Root.. p lb.	0s. 8d. 0s. 9d	0s. 6d. 0s. 8d
Rhubarb, China, rnd.	1 0.. 2 9	1 2.. 3 0
flat..	1 2.. 2 10	1 4.. 3 2
Dutch, trimd.	3 3.. 3 6	3 5.. 3 9
Russian	11 0.. 0 0	13 6..14 6
Saffron, Spanish	46 0..49 0	50 0..54 0
Salep......per cwt.	£12 0s.£14 0	£9 0 £12 0
Sarsaparilla, Lima..	0s. 10d.. 1s.2d	0s. 10d.. 1s. 2d
Para	0 10.. 1 2	0 11.. 1 2
Honduras	0 11.. 1 6	0 11.. 1 6
Jamaica.	1 3.. 2 4	1 2.. 2 7
Sassafras....per cwt.	10 0..12 0	10 0..12 0
Scammony .. per lb.		
virgin	28 0..35 0	30 0..32 0
second	14 0..24 0	14 0..26 0
Seedlac	50 0..70 0	42 0..60 0
Seneka Root........	2 2.. 0 0	2 0.. 2 2
Senna, Calcutta	0 1½.. 0 2½	0 2.. 0 2½
Bombay	0 2½.. 0 3½	0 2.. 0 4¼
Tinnevelly	0 2¾.. 0 10½	0 4.. 0 7¾
Alexandria	0 4.. 0 7	0 4.. 0 6
Shellac, orange, pr.ct.	160 0 160 0	190 0..207 0
liver & garnet.	155 0 170 0	190 0..210 0
block	130 0 150 0	175 0..190 0
bttn.dk.to mid.	145 0 155 0	160 0..175 0
good and fine..	160 0 180 0	190 0..200 0
Snake Root	1 2 .. 1 3	0 10.. 1 2
Spermaceti, refined..	1 2.. 1 4	1 10.. 0 0
Squills	0 1.. 0 2½	0 2.. 0 4
Sticklac	70 0.. 95 0	60 0..80 0
Tamarinds, E. India.	10 0..12 0	7 0..10 0
W.I. per cwt.	16 0..32 0	15 0..40 0
Terra Japonica,		
Gambier.. per cwt.	16 0..17 0	16 6..17 6
Cutch	22 0..23 0	26 6..28 0
Valerian Root, Engl.	20 0 .40 0	20 0..40 0
Vanilla,		
Mexican .. per lb.	30 0..70 0	40 0..80 0
Brazil............	0 0.. 0 0	14 0..20 0
Wormseed ..per cwt.	5 0..10 0	0 0.. 0 0
FARINA, Scotch	20 0..25 0	16 0..16 6
GUM ....per cwt.	£. s. £. s.	£. s. £. s.
Ammoniac, drop	2 15.. 5 0	2 15.. 5 0
lump....	0 15.. 1 15	0 15.. 2 0
Animi, fine pale	15 0..16 10	14 10..16 10
bold amber ..	13 0..14 10	13 0..16 0
medium	9 0..11 11	8 10..11 10
small & dark.	5 0.. 8 5	5 0.. 8 0
ordinary dark	2 10.. 5 0	2 10.. 5 0
Arabic, E.I.f.palepickd	2 10.. 2 15	2 10.. 3 2
unsorted, good to f.	1 18.. 2 10	1 15.. 2 8
red and mixed	1 4.. 1 10	1 4.. 1 12
siftings	0 0.. 0 0	0 18.. 1 3
Turkey, pkd. gd. to fi.	5 10.. 7 10	5 10.. 7 10
second & infr.	2 2.. 5 5	2 5.. 5 5
in sorts	1 10.. 2 3	1 14.. 2 5
Gedda	1 6.. 1 7	1 5.. 1 6
Barbary, white......	1 11.. 1 13	1 10.. 1 15
brown	1 8.. 1 10	1 8.. 1 11
Cape	0 16.. 0 18	0 15.. 0 18
Assafœtida, fair to gd.	1 0.. 5 0	1 0.. 4 10
Benjamin, first qual.	18 10..35 0	18 0..35 0

GUM.	1861. £. s. £. s.	1860. £. s. £. s.
Benjamin, 2nd qual.	8 5..16 10	8 10..16 10
3rd ,,	3 0.. 7 10	3 0.. 7 10
Copal, Angola red ..	5 0.. 6 5	4 7.. 4 15
pale..	4 5.. 5 5	3 6.. 4 10
Benguela	4 10.. 5 10	3 10.. 4 5
Sierra Leone lb.	0s. 8d. 1s. 8d	0s. 9d. 1s. 9d
Manilla, pr. ct.	15 0..43 0	15 0..43 0
Dammar, pale, pr. ct.	44 0..49 0	40 0..46 0
	£. s. £. s.	£. s. £. s.
Galbanum..........	7 0.. 9 0	8 0..10 0
Gamboge, pkd. pipe .	6 0.. 8 0	5 10.. 8 10
in sorts ..	4 0.. 5 10	4 0.. 5 15
	s. d. s. d.	s. d. s. d.
Guaiacum ....per lb.	0 8.. 1 6	0 10.. 1 9
Kino ...... per cwt.	95 0..120 0	90 0..105 0
Kowrie	16 0..26 0	14 0..15 6
Mastic, pkd., per lb..	7 6.. 8 6	8 6.. 9 6
Myrrh, gd.&fi., pr.ct.	140 0 180 0	160 0 230 0
sorts	80 0 130 0	90 0 150 0
Olibanum, pale drop.	60 0..68 0	56 0..65 0
amber & yellow	40 0..54 0	32 0..54 0
mixed & dark..	12 0..26 0	12 0..26 0
Senegal	38 0..45 0	28 0..33 0
Sandrac............	90 0 105 0	94 0 117 6
Tragacanth, leaf	180 0 340 0	190 0 340 0
in sorts.	100 0 130 0	100 0 126 0
LAC DYE, per lb. D. T.	1 10½.. 1 11	1 10½.. 2 0
B Mirzapore........	1 6.. 1 7	1 7.. 1 9
Other good and fine..	1 0.. 2 5	1 1.. 2 3
Ord. & Native marks	0 2.. 0 11	0 4 .. 1 0
OILS..........per tun	£. s. £. s.	£. s. £. s.
Seal, pale	36 0.. 0 0	36 0.. 0 0
yellow	32 0..34 0	31 10..32 0
brown	30 0.. 0 0	30 0.. 0 0
Sperm, body........	98 0 100 0	92 0..92 10
headmatter	97 0..100 0	93 0 . 94 0
Cod................	36 10..37 0	40 0.. 0 0
Whale, Greenland ..	0 0.. 0 0	37 0..37 5
South Sea, pale	37 0.. 0 0	35 10..36 0
yellow	33 0.. 0 0	32 10.. 0 0
brown	32 0.. 0 0	30 0.. 0 0
E. I. Fish	30 0.. 0 0	28 10..29 0
Olive, Galipoli ..tun	59 0.. 0 0	62 10..63 0
Trieste	57 0.. 0 0	60 0.. 0 0
Levant	53 0.. 0 0	56 0..57 0
Mogadore	48 0.. 0 0	56 0.. 0 0
Spanish	56 0.. 0 0	60 10..61 0
Sicily	55 10.. 0 0	60 10..61 0
Florence, pr.½-chst.	0 19.. 1 0	0 18.. 1 0
Cocoanut, Cochin, tun	45 10.. 0 0	44 10..45 10
Ceylon....	44 0.. 0 0	43 10..44 0
Sydney ..	41 0..43 0	39 0..43 10
Ground Nut and Gin.		
Bombay..........	38 15..39 10	40 0.. 0 0
Madras	40 0..41 0	44 0..45 0
Palm, fine	44 0..45 0	45 0.. 0 0
Palm Nut..........	38 0..39 0	33 0..34 0
Linseed	30 0.. 0 0	28 0.. 0 0
Rapeseed, Engl. pale.	40 6..41 0	41 10.. 0 0
brown	38 0.. 0 0	40 0.. 0 0
Foreign do.	40 0..42 0	42 10..43 0
brown	38 6.. 0 0	40 10.. 0 0
Lard	59 0.. 0 0	62 0.. 0 0
Tallow	35 0.. 0 0	30 0.. 0 0
Rosin	0 0.. 0 0	7 5.. 0 0
OILS, Essential;	s. d. s. d.	s. d. s. d.
Almond, essen. pr. lb.	30 0..31 0	30 0..31 0
expressed..	1 0.. 0 0	1 0.. 0 0
Aniseed	6 10.. 0 0	7 11.. 8 0
Bay........ per cwt.	122 6.. 0 0	90 0 100 0
Bergamott....per lb.	6 6..14 0	6 6..11 0
Cajeputa, bond, pr.oz.	0 1½.. 0 1¾	0 1.. 0 1¼
Caraway .... per lb.	4 3.. 6 0	4 3.. 6 0
Cassia..............	8 9.. 0 0	12 0.. 0 0
Cinnamon(inb.) p.oz.	2 0.. 3 10	3 0.. 4 3
Cinnamon Leaf	0 1.. 0 2½	0 2 .. 0 2½
Citronel............	0 4½.. 0 5	0 3½.. 0 3¾
Clove..............	0 4½.. 0 0	0 2½.. 0 3¾
Croton	0 3 .. 0 4	0 4¼.. 0 4½
Juniper......per lb.	1 10.. 4 0	3 0.. 5 0
Lavender	2 6.. 5 0	2 6.. 5 0
Lemon	5 0..10 6	5 0..11 0
Lemongrass..per oz.	0 4½.. 0 6	0 6 .. 0 6½

PRICE CURRENT—*continued.*

	1861.	1860.
OILS, Essential,	s. d. s. d.	s. d. s. d.
Mace, ex	0 2 .. 0 0	0 $1\frac{3}{4}$.. 0 0
Neroli	6 0.. 9 0	6 0..10 0
Nutmeg	0 $1\frac{3}{4}$.. 0 2	0 $2\frac{1}{2}$.. 0 3
Orange ......per lb.	7 0.. 8 0	10 2..11 0
Otto Roses ..per oz.	16 0..25 0	16 0..26 0
Peppermint ..per lb.		
American	7 6..15 0	8 0..14 0
English	35 0..42 0	24 6..30 0
Rhodium ....per oz.	3 9.. 6 0	3 9.. 6 0
Rosemary ....per lb.	1 10.. 3 0	2 0.. 3 0
Sassafras	3 0.. 3 6	3 6.. 3 9
Spearmint	5 0..12 6	5 0..12 6
Spike	1 3.. 1 6	1 3.. 1 6
Thyme	1 9.. 2 6	2 3.. 3 0
PITCH, British, pr. cwt.	6 0.. 6 3	6 0.. 6 3
Swedish	10 3.. 0 0	10 3.. 0 0
SALTPETRE, per cwt.		
Bengal, 6 p.c. or under	36 0..37 6	45 0..45 6
over 6 per cent.	34 0..36 0	39 0..44 6
Madras	32 0..34 6	38 0..42 6
Bombay	31 0..34 6	32 0..37 6
British-refined	37 0..38 0	41 6..42 6
Nitrate of Soda	12 9..13 6	14 6..16 0
SEED, Canary ...p. qr.	30 0..46 0	46 0..52 0
Caraway, English, p.c.	28 0..30 0	0 0.. 0 0
German, &c.	0 0.. 0 0	30 0..38 0
Clover, English, red..	0 0.. 0 0	0 0.. 0 0
white..	0 0.. 0 0	0 0.. 0 0
Germ. & French, red	0 0.. 0 0	0 0.. 0 0
white..	0 0.. 0 0	0 0.. 0 0
Coriander	0 0.. 0 0	0 0.. 0 0
East India	0 0.. 0 0	11 6..12 6
Hemp	46 0..48 0	42 0..44 0
Linseed, English, p. qr.	0 0.. 0 0	0 0.. 0 0
Black Sea and Azof	51 6.. 0 0	49 0.. 0 0
Calcutta	50 6..53 0	48 0.. 0 0
Bombay	54 6..55 0	50 6.. 0 0
Egyptian	49 0..51 0	47 0.. 0 0
St. Ptrsbg.. Morshnk	51 0..52 0	49 0.. 0 0
Archangel	46 0..48 0	40 0..41 0
Riga	42 0..44 0	38 0..40 0
Mustard, brown, p. bhl	5 0..12 0	10 0..13 0
white	5 0..10 0	11 0..14 0
Niger	50 0.. 0 0	44 0.. 0 0
Poppy, E.I. ..per qr.	57 6..58 0	56 0.. 0 0
Rape, English	0 0.. 0 0	0 0.. 0 0
Danube	62 0.. 0 0	53 0..54 0
Calcutta, fine	55 0..56 0	52 6..55 0
Bombay, Guzerat	64 0..65 0	62 0..63 0
Feroze. & Scinde	53 0..58 0	50 0..56 0
Teel, Sesame or Gngly.	63 0..67 6	59 0..65 0
Cotton ......per ton	7 15.. 0 0	6 0.. 6 5
Gnd. Nut Kernels, tn.	310 0..330 0	310 0..320 0
SOAP, Lond. yel. p. cwt.	21 0..38 0	21 0..38 0
mottled	34 0..38 0	36 0..38 6
curd	52 0.. 0 0	52 0.. 0 0
Castile	37 0..40 0	37 0..40 0
Marseilles	40 0..41 0	40 0..41 0
SOY, China ..(per gal.)	2 3.. 2 5	4 0.. 4 6
Japan	0 10.. 1 0	0 0.. 0 0
SPICES, duty free, except pepper,		
Cassia Lignea, p. cwt.	83 0..92 0	84 0 94 0
Vera	12 0..50 0	12 0..26 0
Buds	200 0.. 0 0	180 0 185 0
Cinnamon, per lb.		
Ceylon, 1st quality.	1 5.. 2 7	1 7.. 2 2
2nd ditto ..	1 2.. 1 10	1 1.. 1 7
3rd ditto ..	0 9.. 1 4	0 10.. 1 4
Tellicherry	0 10.. 1 0	0 9.. 0 11
Cloves, Penang	1 $1\frac{1}{2}$.. 1 4	1 2 .. 1 5
Amboyna	0 $4\frac{1}{4}$. 0 $5\frac{1}{2}$	0 $4\frac{1}{4}$.. 0 $5\frac{3}{4}$
Zanzibar	0 $3\frac{3}{4}$. 0 $4\frac{5}{8}$	0 $3\frac{3}{8}$.. 0 4
Ginger	£ s. £ s.	£ s. £ s.
Jamaica, fine pr. cwt.	7 0.. 9 10	8 0..10 0
ord. to good	2 5.. 6 0	4 0.. 7 10
African	33s. 0d. .33s. 6d.	38s. 0d. 39s. 0d.
Bengal	30 0..32 0	21 0..21 6
Malabar	36 0.. 0 0	33 0..34 0
Cochin	40 0. 105 0	77 0. 130 0
Mace, 1st qlty. lb.	1 6.. 1 10	1 10.. 2 8
2nd. & infr.	0 10.. 1 4	1 1.. 1 8
Nutmegs per lb.		
brown Penang, &c.	0 11.. 4 0	1 6.. 3 10
limed	0 10.. 2 6	1 4.. 2 6

	1861.	1860.
SPICES,	s. d. s. d.	s. d. s. d.
Pepper (duty 6d. pr. lb.)		
Black, in bond		
Malabar	0 $4\frac{1}{2}$.. 0 5	0 $4\frac{1}{2}$ 0 $5\frac{1}{2}$
Aleppee	0 $4\frac{1}{2}$.. 0 $4\frac{1}{2}$	0 $4\frac{1}{4}$ 0 $4\frac{3}{4}$
Penang & Batavia	0 $3\frac{5}{8}$.. 0 $3\frac{3}{4}$	0 $3\frac{7}{8}$.. 0 $4\frac{1}{8}$
Singapore	0 $3\frac{3}{4}$.. 0 4	0 4 0 $4\frac{1}{8}$
White, Tellicherry.	0 $10\frac{1}{4}$.. 1 5	0 $9\frac{3}{4}$. 1 0
Other sorts	0 $5\frac{5}{8}$.. 0 $6\frac{1}{2}$	0 6 .. 0 $7\frac{1}{4}$
Cayenne	1 1 .. 1 6	1 0.. 1 4
Pod, S. Leone pr. c.	28 0..32 0	30 0..36 0
Zanzibar	70 0..80 0	57 0..61 0
Long	32 0..34 0	35 0..38 0
Pimento, mid. to good	0 $2\frac{3}{4}$.. 0 $3\frac{1}{8}$	0 $3\frac{5}{8}$.. 0 $3\frac{7}{8}$
ordinary	0 $2\frac{1}{2}$.. 0 $2\frac{5}{8}$	0 $3\frac{1}{2}$.. 0 0
SPONGE, Turk. f. pkd.	20 0..26 0	20 0..26 0
fair to good	9 0..18 0	9 0..18 0
ordinary ..	3 0.. 8 0	3 0.. 8 0
Bahama ..	0 4.. 1 3	0 3.. 1 0
TEA (duty 1s. 5d. per lb.) in bond.		
Congou, ordinary	0 7.. 0 8	1 1 .. 1 2
good ordinary	0 10 .. 0 11	1 $2\frac{1}{4}$. 1 4
but middling.	1 0 .. 0 0	1 4 .. 1 6
blackish leaf	1 $2\frac{1}{2}$.. 1 4	1 $6\frac{1}{4}$.. 1 7
ditto strong	1 6.. 1 9	1 8 .. 1 10
ditto to extra fine..	1 9.. 2 5	2 0.. 2 4
Ning Yong and Oolong	1 0.. 2 0	1 6.. 2 2
Souchong, ordinary..	0 10.. 1 0	1 5.. 1 6
fair to fine	1 3.. 1 10	1 7.. 2 2
finest	2 0.. 3 1	2 0.. 3 0
Flowry Pekoe, ordinary	1 5.. 1 6	0 0.. 0 0
fair to good	1 $6\frac{1}{2}$.. 2 0	2 0.. 2 6
fine to finest	2 6.. 4 6	3 0.. 6 0
Caper, scented, in bxs.	0 8 .. 2 1	1 $0\frac{1}{2}$.. 2 6
Orange Pekoe, plain..	0 9.. 1 0	1 0.. 1 6
scented	1 2.. 2 3	1 4.. 2 6
Twankay, ordy. Canton	0 0.. 0 0	0 0.. 0 0
common to good..	0 9.. 1 2	0 10.. 1 0
fine to Hyson kind.	1 3.. 1 4	1 3.. 1 4
Hyson Skin, common	0 9.. 0 10	0 10.. 0 11
good to fine	0 11.. 1 1	1 0.. 1 1
Hyson, ordy. to comn.	1 4.. 1 7	1 7.. 1 8
fair to fine	1 8.. 2 6	1 9.. 2 6
finest	2 9.. 4 6	2 9.. 4 0
Young Hys. Boh. kind	0 10.. 1 0	0 7.. 0 9
good to fine	1 2.. 2 3	0 11.. 2 4
Imperial	1 2.. 2 2	1 0.. 2 2
Gunpowder	0 10.. 3 9	1 0.. 3 9
Assam	1 2.. 4 6	1 7.. 4 6
TURPENTINE,		
Rough.... per cwt.	16 0 .. 0 0	9 0 .. 0 0
Spirits, English	44 0.. 0 0	34 6.. 0 0
American, in casks	44 0.. 0 0	35 6.. 0 0
WAX, Bees, English ..	£8 5..£8 10	£8 5..£8 10
German	8 0.. 8 10	8 0.. 8 5
American	9 0..10 0	8 10..10 0
white fine	10 0..10 10	10 0..10 15
Jamaica	8 10.. 9 10	9 0.. 9 10
Gambia	9 0.. 0 0	9 0.. 9 10
Mogadore	6 10.. 8 0	6 0.. 7 10
East India	7 10.. 8 5	8 10.. 9 10
ditto, bleached	9 0..11 0	9 0..11 10
vegetable, Japan	2 16.. 3 4	3 0.. 3 5
WOOD, DYE, bar, pr. tn.	3 5.. 0 0	3 10.. 0 0
Brazil, first quality	70 0..75 0	80 0..89 0
second quality..	55 0..60 0	60 0.. 0 0
logs	20 0..21 0	20 0..30 0
Braziletto	4 0.. 5 10	4 0.. 5 10
Camwood	18 0..24 0	26 0..29 0
Ebony, Green	7 0.. 8 10	9 10..10 0
Fustic, Cuba	8 10.. 9 0	8 15.. 9 5
Jamaica	5 5.. 5 10	5 10.. 5 15
Savanilla	5 10.. 5 15	5 5.. 5 10
Zante	7 0.. 9 0	9 10..11 0
Logwood, Campeachy	6 10.. 6 15	6 10.. 0 0
Honduras ..	5 10.. 6 0	5 5.. 0 0
St. Domingo	5 0.. 5 10	5 0.. 0 0
Jamaica	4 15.. 5 0	4 10.. 4 15
Nicaragua, lar. & sol.	9 0.. 0 0	12 0..13 10
small	8 10.. 0 0	6 0.. 8 0
Lima, first pile	10 0.. 0 0	13 0..14 0
second pile ..	8 10.. 9 0	12 10..13 0
Red Sanders	6 0..6 2 6d	5 10 .. 0 0
Sapan, Bimas	6 10.. 8 0	6 10.. 8 5
Siam, &c.	6 15.. 9 0	6 15.. 9 0

PATENTS

LETTERS PATENT.

DRUGS, CHEMICALS, ETC.

2433 West, J. A., St. Helen's, Lancaster, improvements in treating solutions containing sulphate of soda; also, metallic and other matters, and in obtaining products therefrom.

2557 Hunter, A. G., Newcastle-upon-Tyne, improvements in treating sulphurets.

2597 Chisholm, J., Chisholm, G., and Kent, R. T., an improved method of obtaining compounds of nitrogen.

2654 Newton, W. E., Chancery-lane, improvements in the production of alumina and salts of alumina.

2764 Forster, W. C., Lambeth, an improved method of manufacturing soluble silicate of potash.

2804 Ralston, W. H., Keele, Staffordshire, improvements in the manufacture of soda ash.

2861 Ralston, W. H., Keele, Staffordshire, improvements in the manufacture of hydrate of soda.

INDIA RUBBER AND GUTTA PERCHA.

2689 Newton, W. E., Chancery-lane, an improvement in preparing compounds of india rubber, gutta percha, and allied gums.

MISCELLANEOUS.

2438 Calkin, J., Oakley-square, Mornington-crescent, an improved apparatus for protecting the upper portion of the face from the inclemency of the weather, dust, or otherwise.

2491 Strang, M., Glasgow, improvements in the manufacture of lubricating oil.

2503 Davies, G., Serle-street, an improved method of, and apparatus for, refrigerating and freezing.

2510 McDougall, A., Manchester, improvements in materials or compositions for destroying vermin on sheep and other animals, and for protecting them therefrom.

2571 Brooman, R. A., Fleet-street, improvements in apparatuses for evaporating and concentrating, specially applicable to the manufacture of sugar.

2578 Tylor, W. H., Warwick-lane, improvements in apparatus for heating and aerating saline or other liquids for baths, and in the salinometers employed in connection therewith, parts of which improvements are applicable to other purposes.

2665 Newton, A. V., Chancery-lane, an improved mode of, and apparatus for, dessiccating wet or moist substances.

132 Mennons, M. A. F., Paris, improvements in apparatus and materials for filtering water and other liquids.

213 Mushet, R., Coleford, Gloucester, an improvement or improvements in the manufacture of melting pots or crucibles.

PROVISIONAL PATENTS.

DRUGS, CHEMICALS, ETC.

642 Phillips, J. A., Kensington, certain improvements in the manufacture of white lead and other salts of lead, direct from ores containing carbonate of lead.

769 Willans, J. G., Belfast, improvements in the preparation of hydrated oxide of iron, and the application of such prepared oxide for the absorption or separation of sulphur from certain gases.

INDIA RUBBER AND GUTTA PERCHA.

569 Silver, H. A., and Griffin, H., Silvertown, Essex, improvements in the manufacture of insulators and other articles in india rubber, which are required to retain a shape once given to them; in curing hard rubber, ebonite, or vulcanite goods; in moulding india rubber articles; in the construction of cellular fabrics in india rubber; and in forming articles, partly of soft and partly of hard rubber, or ebonite, or vulcanite; and in varnishes for india rubber goods.

637 Truman, E. T., Old Burlington-street, improvements in masticators or apparatuses for preparing gutta percha, caoutchouc, and other similar substances.

697 Brooman, R. A., Fleet-street, improvements in preparing caoutchouc, adapted especially to dental purposes.

MISCELLANEOUS.

378 Rimmel, E., Strand, a new process for impregnating the atmosphere with perfuming or purifying vapours.

617 Hebson, D., and Ramsden, W. G., Liverpool, improvements in apparatus for obtaining fresh water from salt water.

621 Saulay, O., Bordeaux, improvements in stopping or closing bottles, vases, cans, and similar articles, whether of glass, metal, or other material.

650 Lorberg, W., Eastcheap, an improved process for obtaining and utilizing the chemical products of spent bark (commonly called "tan"), and all other woody fibres; also, improved apparatus to be employed therefor.

669 Prince, A., Trafalgar-square, an improved electro-galvanic friction brush.

684 Jervell, J., Norway, improvements in the preparation of fish and sea animals for manure, and in apparatus connected therewith.